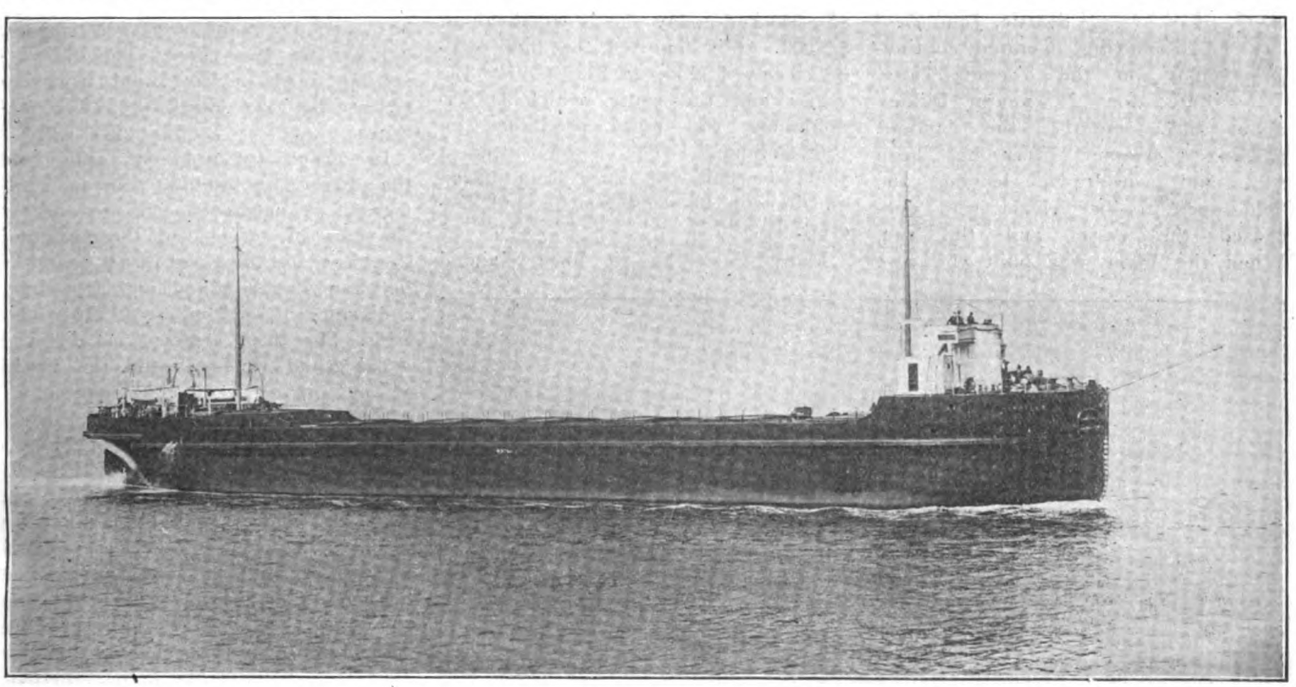
THE MARINE REVIEW

VOL. 41 CLEVELAND JULY, 1911 NEW YORK No. 7

THE TOILER

DURING the past twelve months wonderful strides have been made with the Diesel type crude oil engine in connection with marine work in Great Britain and on the continent, not only in government dock yards, but also in private shipyards. Much experimental work has been carried out in secret. To a certain extent it has been known that large marine oil engines were being built, but reliable data have been lacking. It is now fairly well known that the German battleship Goeben, now in process of completion, has a center shaft driven by a 12,000 H. P. Diesel motor, but further figures and official consent or denial are unobtainable. So far only two full powered motor vessels of really large dimensions have undergone trials, one being the 1,000-ton oil carrier Vulcanus, owned by the Anglo-Saxon Petroleum Co., which has proved to be a great success, and has caused her owners to order another oil engine of more than twice her horsepower. The other vessel is the Toiler, which has been built for service on the Canadian lakes and canals by Swan, Hunter & Wigham Richardson at their Neptune works, Newcastle-on-Tyne, and which reached Montreal some weeks ago. She is by far the largest craft of her type actually afloat.

The Toiler is a twin-screw vessel 248 ft. in length between perpendiculars, 42½ ft. beam and 19 ft. molded depth, and 14 ft. loaded draught. She is fitted with two 4-cylinder 180 B. H. P. reversible Diesel oil engines of



THE TOILER, WITH DIESEL OIL ENGINES, BUILT AT NEWCASTLE-ON-TYNE FOR SERVICE ON THE GREAT LAKES

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the two cycle type. They were constructed by the Diesel Motorer Co., Stockholm, and installed by the builders of the hull. Power is developed at 250 revolutions per minute and is equivalent to about 400 I. H. P.

She is built in conformity with lake practice with engines aft and deckhouse forward, but as will be seen by the photograph her appearance is striking, as she is funnelless. She has six large hatches.

The maiden trip of the Toiler was to Calais, to which port she carried 2,650 tons of coal in addition to 40 tons of oil fuel on a mean draught of 14 ft. Her machinery weighs 60 tons less the steam engines and boilers. She left the Tyne in very rough weather and completed the voyage at an average speed of 5.9 knots or 6¾ miles. On the return voyage, running light, her average speed was 8.2 or 9½ miles. Throughout the round trip the consumption of fuel, including that used for the auxiliary compressor, was only 6½ tons, that is 1.7 tons per 24-hour day, of 18,000 British thermal units calorific value oil.

On fuel alone the saving over steam engines of the same indicated horsepower might be considerably cut. Fuel costs naturally vary, however, according to the proximity of coal fields or sources of oil supply. It is estimated, however, that about $5 a day is saved in the strokehold, as stokers are dispensed with. Another item which makes for economy is the fact that cargo may be carried in the space hitherto given over to boilers and bunkers. The oil fuel is carried in the double bottom in place of water ballast, and comparing weight for weight with coal, only one-fourth is required, thus increasing her deadweight carrying capacity by 120 tons.

All the deck machinery and engine room accessories of the Toiler are worked by compressed air, the compressor being driven by a small Diesel engine. Electric lights are installed throughout, the dynamo being driven by a small paraffine motor. The cabin heating arrangements are by hot water heated by the exhaust gases though in some cases small coal stoves are employed.

The Flyer Sold

Seattle, June 27.

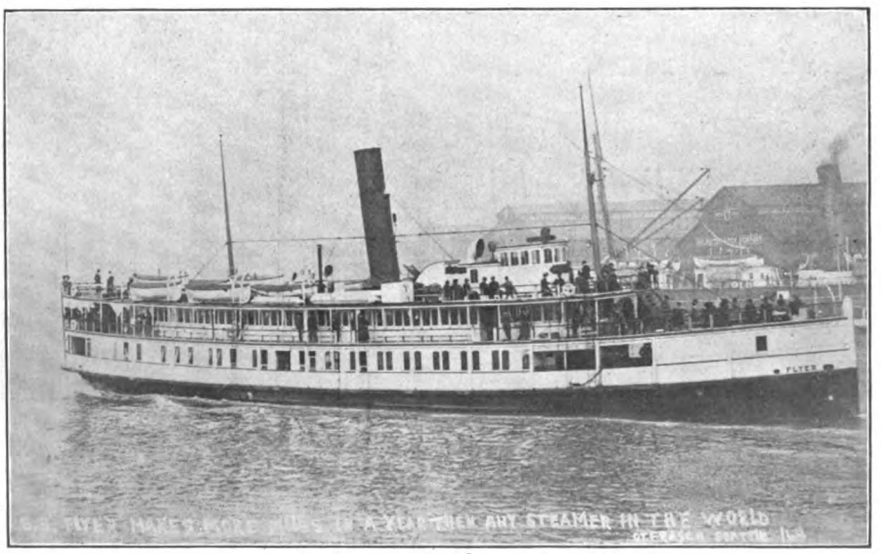
AFTER having operated continuously on the Tacoma-Seattle route for 21 years lacking about three months, the daylight passenger steamer Flyer has been sold and withdrawn, leaving the field open to her rivals who purchased the vessel and the run. When the Flyer was built she cost $115,000 and today she is worth about $35,000. It is reported that her owners received close to $125,000 for the vessel and the route, which is undoubtedly the most profitable on Puget Sound. The Flyer, after a short overhall, has since been placed on the run between Seattle and Everett.

Many times has it been claimed that the Flyer holds the world's record for mileage, that is for annual steaming. During the last score of years the Flyer has steamed between 77,000 and 80,000 miles every 12 months. No vessel is better known on this coast than this famous old inland liner and in all parts of the world can be found people who know of the Flyer and have traveled on her. With residents of Seattle and Tacoma, the Flyer has always been popular, this being largely due to her freedom from mishap, her speed and the consistency with which she maintained her schedule.

The distance between the two largest cities on Puget Sound is approximately 25 nautical miles or 28 statute miles. The Flyer operated four round trips a day from 6:45 a. m. to 9:45 p. m., for years, and so regular has she been that one could almost set his watch by her whistle without making a great error. It is interesting to consider the Flyer's record from the standpoint of figures.

From the fall of 1891, when she began service between Seattle and Tacoma, to June 7, 1911, when she was withdrawn, the Flyer has operated approximately 6,220 days on this route. Her daily steaming average was 224 miles, but in the summer of 1909 she made five trips daily, instead of four, for over four months, thus adding over 8,000 miles to her total for that year. In round numbers she has carried a total of 4,000,000 people between the two cities. The old vessel has made 27,176 round trips between the two cities or 54,352 passages.

In order to properly appreciate the Flyer's steaming record, comparison is necessary. In her nearly 20 years of service on Puget Sound she has made the equal of 631 passages between Puget Sound and Honolulu, a distance of 2,410 miles, or 316 round trips. She has steamed a distance equal to 61 times around the world at the equator or an equal number of voyages from Puget Sound to Europe and return via the Straits of Magellan. She has made the equal of 51 voyages to Europe and return via Cape Horn, over the course taken by sailing ships. The Flyer has steamed a distance equal to 286 round trips between Seattle and Nome, the distance between the two points being 2,677 miles. She has made a distance equal to 426 passages across the Atlantic between New York and Liverpool or 360 runs across the Pacific between Puget Sound and Yokohama, or 180 1-3 round voyages between this side and Yokohama. The same distance is equal to 1,874 passages between Seattle and San Francisco, 812



THE PASSENGER STEAMER FLYER, OPERATING BETWEEN SEATTLE AND TACOMA

Generated on 2024-08-28 11:12 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

miles, or 937 round trips. Over the American-Hawaiian's triangular route between Seattle, Honolulu, Salina Cruz and returning via San Diego and San Francisco, a total distance of 8,834 miles, the Flyer has made 172 1-3 voyages, the steaming distances over this route being: Seattle to Honolulu, 2,410 miles; Islands to Salina Cruz, 3,442 miles; Salina Cruz to San Diego, 1,720 miles; San Diego to San Francisco, 450 miles; San Francisco to Seattle, 812 miles.

The figures further show that the Flyer has steamed a distance equal to 6 1-3 times that between the earth and the moon. In other words, she has completed three voyages to the moon and back and is now 69,840 miles out on the fourth voyage.

Having carried 4,000,000 passengers in 20 years, it would require only two years more for the Flyer to have had aboard a number equal to New York's population. Seattle's population being 300,000, the Flyer has carried every person in this city 13 1-3 times, while under the same comparison every one in Tacoma has ridden on this vessel 40 times. The steamer's regular permit is for 500 passengers, but her special summer license is for 700.

In her early history the Flyer covered the distance between Tacoma and Seattle in one hour 19 minutes, which is said never to have been beaten. In her earlier days she ran day after day in from 1:24 to 1:28 at 106 revolutions. In the last three years, with the hull heavier with the absorption of water, she has been making from 110 to 111 revolutions. During the Alaska-Yukon-Pacific Exposition, in 1909, she was operated with greater power and on a closer schedule, making one run that summer in 1:23 and averaging 1:26. During four months that season she made five round trips per day or a daily mileage of 280 miles. Each year her average service has been 350 days, usually one day a month being taken off to wash boilers, drydock and make minor repairs. Her average speed has been 18½ miles an hour, or 1:40 between the two cities, during the last three years.

Honis & Nelson built the Flyer at Portland, in 1890, and best selected fir was used in the hull. This was cut during the winter, so that it might be free of sap, and the wood was salt pickled to preserve it. To this care in building is largely due the steamer's splendid condition to this day. She was built for speed, on fine lines, with the following dimensions: Length, 170 ft.; beam, 21 ft.; depth, 15 ft. For a time she was very cranky and once in the Columbia river almost turned turtle. Having been built expressly for the Seattle-Tacoma route she was brought to Puget Sound in the fall of 1891 and began to operate. Six weeks later her upper works were destroyed by fire while she was lying at her Seattle dock. The hull was also badly damaged. Upon being rebuilt the vessel was sponsoned 4 ft. on each side, thus evolving what experts have declared to be one of the finest models extant. The steamer's success testifies to the splendid lines on which she is modeled.

The Flyer has triple expansion engines, 21¾ in., 33½ in. and 54 in. by 3 in. These engines were built in 1890 by Neafie & Leroy, of Philadelphia. They are exact duplicates of the engines in J. Pierpont Morgan's yacht Corsair. Her horsepower is 2,500 and pitch of wheel 16 ft. 3 in. The boiler is a two-furnace locomotive type. It was installed ten years ago, replacing one of the same kind which had developed a defect. As a rule not more than 1,000 horsepower has been used.

During her first 13 years on the route, the Flyer consumed a forest of cordwood, but six and a half years ago she was converted into an oil burner, the results having been very satisfactory. The oil burners in use are the invention of Chief Engineer A. B. Hill. The Flyer is a most economical vessel and on the Tacoma run, steaming 224 miles a day, she averaged only 60 barrels of fuel oil per day. The original engines in the steamer are still in daily service and are good for many years. When passing survey, upon being sold, the condition of her machinery was a cause of considerable surprise, as they required practically no overhauling. One reason for the Flyer's fine condition after many years of hard service is that her owners have always paid the best wages on Puget Sound and have always sought to obtain the best men possible in both deck and engine crews.

Aside from the fire already mentioned and which proved a blessing in disguise, the Flyer has been singularly free from serious accidents. She was twice in collision with other local vessels and was somewhat damaged. About six years ago she ran into the wharf at Seattle while making a landing. This mishap was due to a sheared bolt in the reverse gear making it impossible to stop the engines. This accident smashed her stem and injured the forward house. With the sale of the Flyer, the Columbia River & Puget Sound Navigation Co.'s fleet passes out of existence, for this company sold its other vessels on the Columbia river several years ago. This company built in Seattle the famous stern-wheeler Bailey Gatzert, which operated on the Tacoma route for three years until succeeded by the Flyer. The Gatzert is still doing good service on the Columbia.

Salving the Hazel Dollar

The history of marine repair work on Puget Sound contains no record of any repair job so extensive as that at present being done on the British steamer Hazel Dollar, owned by the Robert Dollar Co., of San Francisco. The Hazel Dollar, gross tonnage 4,304, and net tonnage 2,804, is in the drydock of the Heffernan Drydock Co., Seattle, for repairs requiring 60 days. This work requires the treating of 106 plates and 270 floors and an equal number of frames, and extensive repairs along the greater portion of the bottom in addition to work on engines. This contract requires the driving of 115,000 rivets.

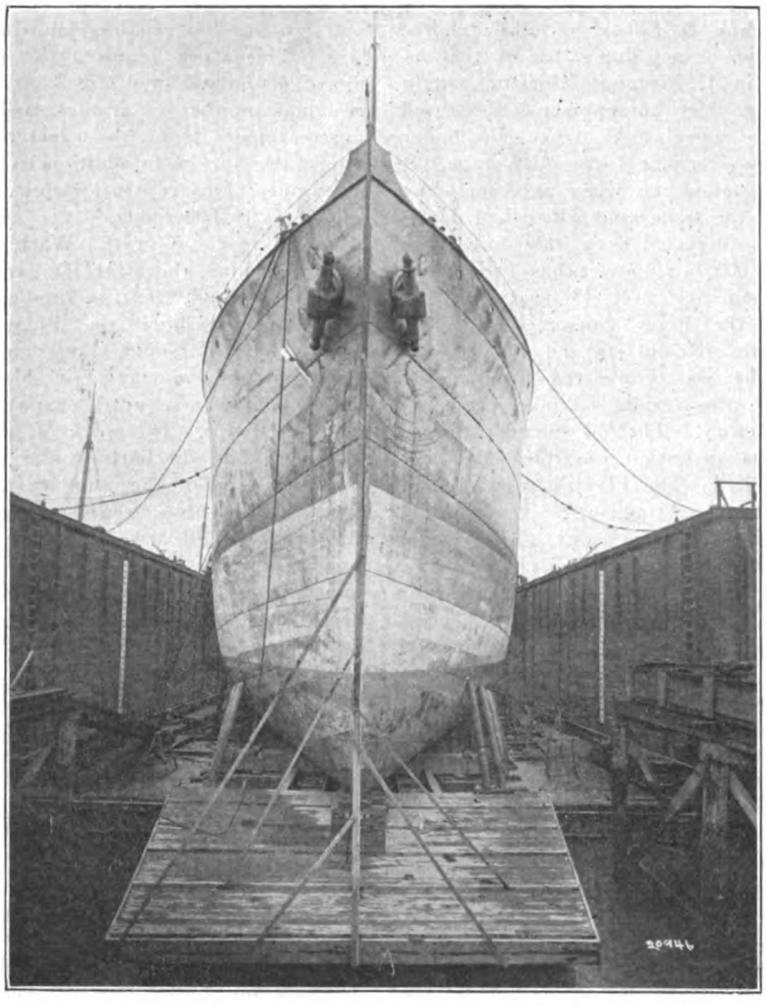
Bound from Everett, Wash., for Hankow, China, the Hazel Dollar, carrying about 3,600,000 ft. of lumber and piling, went ashore on Possession Point, Whidby Island, Puget Sound, early on the morning of May 3. She remained fast until nearly midnight of May 5. The work of salving the vessel and discharging the cargo was done under the supervision of Capt. S. B. Gibbs, representing the San Francisco Board of Marine Underwriters, and Capt. A. Gow, port superintendent for the owners. While the salvage was not a particularly difficult piece of work it involved the exercise of considerable technical skill and it was performed in fast time and in excellent manner.

Upon arriving at the scene of the accident about noon of May 3, the surveyors found No. 1 hold full of water and ship's pumps unable to lower it. No. 2 and No. 3 bilges were also found leaking, also engine room tank, but ship's pumps were able to keep them under control. It was apparent that the vessel was hard and fast aground and that it would be necessary to lighter a considerable part of the cargo to float ship. Longshoremen were started at work discharging deck cargo of logs over the side and rafting them. Lumber was discharged into scows which came from Everett and Seattle. At 4:30 p. m., the same day, the starboard bower anchor was lowered with about 15 fathoms of cable onto a scow with wire hawser attached, the scow being towed a full cable's length off the port bow where the anchor was let go. With the windlass a strain was hove on the cable. At 7:30 p. m., a wire hawser was run out to the tugs Tyee and Wanderer from the after

Generated on 2024-08-28 11:17 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

end of ship and at 9:15 p. m. an attempt was made to haul ship off by using her own engines and heaving on the windlass to the anchor on the port bow and assisted by the tugs. At 10:30 p. m., finding the attempt unsuccessful, it was abandoned for the night. During this day there was a strong southeasterly wind and constant heavy rain during the latter part of the day.

Early the next morning, May 4, 26 longshoremen were started discharging deckload to two scows. In the afternoon another gang of 11 men was employed discharging and the rough



STEAMER HAZEL DOLLAR IN HEFFERNAN'S DRY DOCK, SEATTLE, WASH.

lumber was rafted on top of the piling. The spare anchor was dropped a cable length off the port quarter and the cable was hove tight. At 9 p. m. another effort was made to release the vessel by heaving on anchors and using ship's engines, but two hours later, having made no progress, work was stopped. There was constant rain and southeasterly winds.

On May 5, in the heavy seas and strong wind, one of the scows became waterlogged and in rolling threw part of its cargo overboard. During the day the divers surveyed the ship's bottom and longshoremen continued discharging. At 6 p. m., the kedge anchor was dropped a cable's length astern and soon after a hawser from the tug Tyee was taken aboard and made fast aft. About 11 p. m. work of heaving the ship off was started using ship's engines, heaving on the anchors and assisted by the tug Tyee. At about 11:25 p. m., the ship floated and it was found necessary to slip the port quarter anchor. The port bower anchor was hove off and also the stern anchor, the vessel being hauled out into 6½ fathoms of water and the port anchor was let go with 30 fathoms of cable. During the morning of this day a strong southeasterly breeze with heavy rain squalls was experienced followed by calm and clear weather. The next morning an effort to find the port quarter anchor, which was slipped, was unsuccessful. At 6:20 a. m., May 6, the Hazel Dollar started at half speed for Everett, using her hand steering gear. During the time the vessel lay on the shore, pumps were kept going continuously to keep the water down in holds Nos. 2 and 3. Also, during the run to Everett, No. 1 hold being practically full of water, efforts were made to lower it but without avail.

As it was known the vessel was very seriously damaged, it was decided on May 8 to discharge all cargo so as to permit of drydocking and repairs. From this day until May 20, work of discharging was continued. All cargo was taken out with the exception of some lumber which was left in No. 3 and 4 'tween decks, and also some which was in the poop deck to trim the vessel somewhat as she was down to the head on account of No. 1 hold being full of water. During the discharge of cargo considerable difficulty was experienced in taking lumber out of No. 1 hold, owing to this hold having been filled with water, the lumber having become swollen and jammed under the 'tween deck beams. It was necessary to haul this out with wire ropes attached to the winches, damaging some of the lumber in forcing it loose and pulling it out.

At 6 a. m., May 21, the Hazel Dollar left Everett under her own steam and assisted by the Tyee, bound for Seattle. She was placed in the Heffernan drydock May 23 and, after examination, work was commenced by the Heffernan Drydock Co. on the biggest job of its kind ever undertaken at a North Pacific yard.

The spot where the vessel grounded was very rocky and the steamer settled on boulders with the fall of the tide and heavy cargo, piercing her bottom in many places. She rested on large boulders on the starboard side just forward of the main engine. The ship ran ashore at high water and to illustrate the difficulties of the position it is only necessary to state that there was a drop of 16 feet in the tide the following day.

The survey disclosed that the damage extended 310 feet from the stem aft on both sides principally on the bottom and up to well above the tank margins. The plates damaged included practically the whole bottom from the turn of the bilge on the port side to the starboard side and above the margins of the tanks. There are 260 ft. of tank margins to renew. The plates to be treated are 5 ft. 6 in. in width and 26 ft. in length, so that when it is stated that 106 plates are to be treated, an idea may be gained of the great amount of work required. Of the total plates damaged, 66 are to be renewed and the others faired either in place or taken out for fairing. The number of floors requiring treatment are 130 on each side and

Generated on 2024-08-28 11:14 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the same number of frames. Some of the floors are faired in place and some removed, but the majority are new floors. The rivets to be removed number 115,000. Great damage was disclosed under the engines and boilers, so much so that the engine seatings were forced up while the boiler seatings were forced so far as to break the pipes. The auxilliary machinery to be removed in order to make repairs to the tank tops in the engine room. The tailshaft also required to be withdrawn and the main engine relined throughout. The vessel will occupy the dock a total of 60 days and is expected to be completed during the latter part of July.

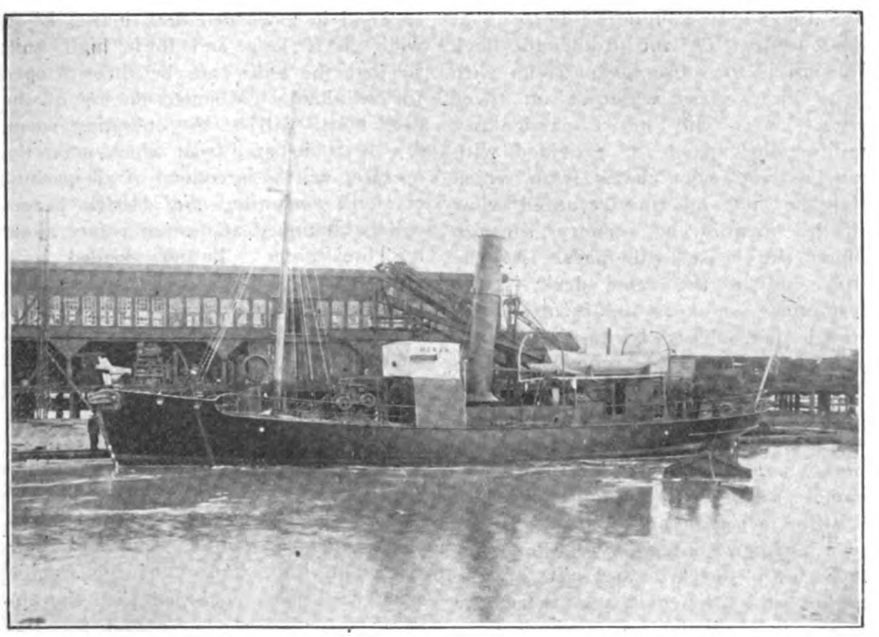
The Hazel Dollar is a steel, four-masted screw steamer, built in 1905 by A. Rodger & Co., Port Glasgow. Since coming to this coast she has been engaged in carrying lumber to the Orient, for which trade she was built and for which she is splendidly adapted. The vessel measures 370 ft. in length, 50 ft. beam and 18.7 ft. depth. She is registered at Victoria, B. C. Her engines are triple expansion, 25½ in., 42 in. and 70 in. by 48 in., with horsepower of 394.

While the Hazel Dollar is a large vessel she is not taxing the capacity of the Heffernan dock, which is 385 ft. in length with beam of 100 ft. and capacity for 8,000 tons. This dock has in the past lifted much heavier vessels and on it some notable repair jobs have been done. The Norwegian steamer Eir had about $80,000 worth of work done here last year, while numerous other large carriers have been lifted for either cleaning or repairs. The work on the Hazel Dollar is being rushed as time is an object in this case. J. T. Heffernan, president of the Heffernan Drydock Co., and also of the Heffernan Engine Works, has a reputation for turning out work ahead of time and in the present instance, the Hazel Dollar will undoubtedly be delivered to her owners before the date specified in the contract.

Whaling Steamers Paterson and Moran

Seattle, June 27.

DELIVERY has just been made by The Moran Co., of this city, of two modern whaling steamers, named Paterson and Moran respectively, after President and General Manager J. V. Paterson and after the plant where they were constructed for the Pacific American Whaling Co. This company is composed of British Columbia capitalists, but it is incorporated in this state. The Paterson and Moran are under American registry and they are the only American whaling steamers, exclusive of Alaska, operating in North Pacific waters.



STEAM WHALER MORAN, BUILT BY THE MORAN CO., SEATTLE
—Photo by Webster & Stevens, Seattle.

The Moran and Paterson are splendid types of the modern steam whaler, being equipped with every necessary device for catching, keeping afloat and towing to the stations the leviathans of the deep. They are the first vessels of their kind constructed on this coast. The Norwegians have given to the world the most advanced ideas on the construction of whalers and within the last two years about ten whalers have been brought out from Norway to enter service out of British Columbia ports. Only recently the whalers Brown, Blue, Black, Green and White arrived from Kristiania, Norway, and are now whaling in northern waters for the Canadian North Pacific Fisheries Co., of which the Pacific-American Co. is the American branch.

When the Pacific American Co. determined to construct two American vessels to cruise in American waters, The Moran Co. was the lowest bidder and secured the contract. One of the British Columbia whalers was brought here as a model and from her plans were prepared by the builders for the Paterson and Moran. That the most approved type of whaler has thus been evolved is the general opinion and both builder and owner are highly pleased at the results. It is believed that the two American vessels combine all the good points of the Norwegians as well as new ideas which overcome what few faults have been disclosed in earlier types. The Paterson was launched June 10 and the Moran five days later. The former is already in service off Grays Harbor, where the owners have established a whaling station. The Moran had her trial trip June 25 and will be sent to sea some time this week. Both vessels were christened by Miss Marie J. Secor, niece of President Paterson.

One marked feature about this contract is that in both vessels almost perfect uniformity has been attained. This was proved at the trial trips. In the matter of speed, 12 knots an hour being required under the specifications, the Paterson developed 12.37 knots and the Moran 12.33. It is claimed that the latter might have shown more speed had it been necessary. In other respects the two vessels showed practically equal results and the builders are highly elated at having turned out two steamers that made such a favorable showing at their trials. The owners are equally pleased.

The Paterson and Moran are identical. Their dimensions are: Length over all, 96 ft.; between perpendiculars, 91.6 ft.; beam, 18 ft.; depth, 11.2

Generated on 2024-08-28 11:26 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

ft. Both hulls and houses are built of steel of the best construction. Each vessel carries one mast forward. On the bow is mounted a whaling gun of the most modern type. A large whaling winch is located just forward of the house and by this means it will be possible to tow a dozen whales from sea to the shore station. Exceptional facilities are provided for pumping air into the carcasses to keep them afloat so that they can be towed to the rendering plant with the least difficulty.

Each whaler is provided with one single-ended Scotch marine boiler. The engines, also built by The Moran Co., are triple expansion, as follows: 11 in., 18 in. and 29 in. x 18 in. Both vessels are oil burners equipped with the noiseless Schuette-Koerting burner. They have a large fuel capacity, having a steaming radius of 72 hours at top speed. Of course this radius will be greatly increased as it is not intended to operate the steamers at their maximum speed. The vessels register 120 tons gross and 77 net. They were built in a little less than five months, the Paterson having been turned out on time and the Moran three weeks ahead of the time limit. Each vessel cost about $60,000. Each will carry a crew of 11.

Should these vessels prove successful, and their trials were satisfactory in every respect, it is expected that others will be built along the same lines. The advent of these two whalers is expected to inaugurate a new epoch in American waters for, heretofore, the British have taken the lead in whaling in British Columbia waters, except in southeastern Alaska, where one or two American companies have established whaling stations. Vessels of the type of the Paterson and Moran are the descendants of the once famous American whalers, sailing ships which roamed the seven seas. A few American whalers, most of them steam, still venture into the Arctic, but the once large and mighty fleet of sailing ships which formerly sought whales in the icy north, flying the American flag, is now only a historical memory.

Steamer Princess Alice

On Monday, May 29, in brilliant weather, Messrs. Swan, Hunter & Wigham Richardson, Ltd., launched from their Wallsend ship yard the finely modelled passenger steamer Princess Alice, which is being built for the Canadian Pacific Railway Co., for their steamship service between Vancouver, Victoria and Seattle on the Pacific coast. The Princess Alice is about 300 ft. long with a breadth of 40 ft. She is built to the highest class of Lloyds and in accordance with the requirements of the Canadian government for passengers in channel or Pacific coast service. In many respects she is similar to several well-known steamers previously built by Messrs. Swan, Hunter & Wigham Richardson, Ltd., for the same and other owners for service on the Pacific coast of Canada.

The main engines, constructed by the Wallsend Slipway & Engineering Co., are triple-expansion with four cranks balanced on the famous Yarrow, Schlick & Tweedy system to eliminate vibration. The vessel is designed for a speed of close on 18 knots per hour. In addition to the ordinary coal bunkers, the ship will carry fuel oil and the boilers will be fitted with a complete installation of oil-burning apparatus.

The arrangements for the accommodation and comfort of the passengers have been planned so as to be second to none in a vessel of this class. Both the ventilation and lighting of saloons, corridors, staterooms, kitchens, etc., have been carefully studied and lavishly executed. The various public rooms and also the staterooms will be handsomely furnished, particular care being taken that the upholstery and all fittings are of the finest quality. In addition to the commodious cabins extending the whole length of both the upper and promenade decks, there will be several suites of bridal chambers. On the main deck aft is the dining room, panelled in beautiful Italian walnut and finished with decorations in white enamel and gold. Below the dining room is a restaurant with seating accommodation for about a hundred persons at small tables. On the promenade deck forward is the observation room with large plate glass windows on three sides. This will be a particularly comfortable apartment provided with couches and easy chairs from which may be had an uninterrupted view of the magnificent scenery through which the vessel will pass. At the after end of the same deck is the first class smokeroom, furnished in fumed oak. This is another handsome and comfortable room with wide and lofty windows and surmounted by a stained glass dome. The oak walls are to be relieved with hammered copper panels beautifully designed and representing scenes of North American Indian life and various Canadian subjects. On the upper deck both forward and aft of the engine and funnel casing there are large social halls or music rooms. The corridors of the promenade deck will be specially lofty and well lighted by having a coach roof extending over their full length.

Derrick Barges for Panama Canal

Two derrick barges are under way at the Cristobal dry dock for work upon the Colon breakwater. The hull is of wooden construction, 96 ft. long, 42 ft. beam and 8 ft. 6 in. deep, and is divided into four single watertight compartments. The derrick is provided with a 75-ft. boom and is of the stiff-legged type, having two A-frame legs and two stiff back legs. The height to the top of the A-frame is about 48 ft. The cast iron bull wheel is 16 ft. in diameter, operated by double swinging lines. A friction brake will hold the boom at any desired position along the line of its horizontal movement. The boom hoist will have a vertical movement of about ¾ ft. a second, and will be rigged with a seven-part line; the load hoist will have a vertical movement of about 1½ ft. a second, and will be rigged with a four-part line. The turntable, on which the derrick will revolve, is of the dredge type, will weigh about 10,000 lbs., and will be cast in six segments. The total weight of the material entering into the derrick is about 75,000 lbs. The machinery equipment of each barge will consist of a Scotch marine boiler, 11 ft. 6 in. in diameter by 9 ft. in length, and 125 lbs. pressure; a double drum hoisting engine of the Lidgerwood type, with 14 x 18-in. cylinders, and an 8 x 8-in. compound geared swinging engine, with the necessary equipment of pumps, etc. An oil-burning system will be installed in the boiler, and tank capacity for 2,000 gals. of oil will be provided in the hold of the vessel. The machinery will be enclosed in a wooden deck house, 27 ft. wide, 30 ft. long, and 16 ft. high, built so that the sides can be thrown open for ventilation. Mounted on top of the deck house will be the operating room, 8 x 10 ft. in size, from which point the operator will be in control of all machinery. In operation, the derrick barges will be stationed at desired points along the breakwater. Barges, loaded with rock from the Porto Bello quarry, will be towed alongside. The derrick will lift the pieces of rock, and place them on the outer or inner side of the breakwater, as the case may be.

The Pacific Mail Steamship Co. is preparing to install submarine bell receivers on the Mongolia, Manchuria, Siberia, Korea, China, Asia and Persia. The light houses of the Pacific coast have been equipped with the apparatus for over a year and the Pacific Mail is the second big company to install the apparatus.

Generated on 2024-08-28 11:31 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE WHITE STAR LINER OLYMPIC ENTERING NEW YORK HARBOR ON HER MAIDEN TRIP

THE White Star Liner Olympic, the largest vessel in the world, so large that the Mauretania could be comfortably hidden within her, reached New York in June on her maiden trip and was visited by thousands. On her return trip she carried more passengers out of the port of New York than have ever crossed the Atlantic on a single vessel. Since the White Star Line was formed in 1869 each succeeding ship has been a little better than its predecessor, until it now appears as though the Olympic would be the last word in elegance and comfort. All the vessels of this magnificent line have been constructed at the yard of Harland & Wolff, Belfast, Ireland, and it is understood that a contract has never existed between them. The leading particulars of the Olympic are as follows:

	Ft.	In.
Length over all	882	9
Length between perpendiculars	850	
Breadth, extreme	92	6
Depth molded to shelter deck	64	3
Depth molded to bridge deck	73	3
Total height from keel to navigating bridge	104	
Loaded draught	34	6
Gross tonnage		45,000
I. H. P. of reciprocating engines		30,000
S. H. P. of turbine engine		16,000

It will be observed as indicated in Table I that the Great Eastern was 170 ft. shorter and 20,000 gross tons less and that the Mauretania is 90 ft. shorter and 13,000 tons less.

The structural design is shown by the midship section, Fig. 1, and the elevation, Fig. 2. There are eight steel decks amidships, the boat deck, promenade deck (A), bridge deck (B), shelter deck (C), saloon deck (D), upper deck (E), middle deck (F), and lower deck (G), while at the ends an extra deck known as the orlop deck, is fitted, making nine decks in all. The main structure of the vessel ends at the bridge deck, which is carried for 550 ft. amidships. To raise the ends of the ship well above the water line without having recourse to a large sheer, a poop 106 ft. long and a forecastle 128 ft. long are provided. Above the bridge deck, the deck house sides and deck plating are of lighter scantling and have two expansion joints, one forward and one aft, to prevent heavy stresses coming on the thin plating in a seaway. The main scantlings were determined by the builders' long experience with large vessels. Material is massed at the upper flange of the equivalent girder by making the bridge and shelter deck plating and sheer strakes of great thickness and fitting doubling at these points, while the lower flange is strengthened by doubling the bilge plating. The material used throughout is mild steel.

The keel is formed by a single thickness of plating 1½ in. thick and a flat bar 19½ in. wide by 3 in. thick. The bottom plating is hydraulic riveted up to the bilge, the strakes being arranged clincher fashion for this purpose, and the frame bottoms are jogged to avoid the use of taper packing pieces. To reduce the number of butts and overlaps to a minimum plates of large size are adopted. The shell plates generally are 6 ft. wide and about 30 ft. long with a weight of 2½ to 3 tons. The largest shell plates are 36 ft. long and weigh 4½ tons each.

A cellular double bottom extending right out to the ship's sides with floors on every frame, is fitted throughout the vessel. This double bottom is 5 ft. 3 in. deep and is increased to 6 ft. 3 in. in the reciprocating engine room. The subdivision of the double bottom into separate tanks is arranged to provide ample facilities for trimming the vessel or for correcting any list due to unequal disposition of coal or cargo. The double bottom is divided into four compartments transversely by the watertight center keelson and watertight longitudinals on each side 30 ft. from the center line, the subdivision being completed in the usual manner by transverse watertight floors. The subdivision into four tanks transversely is also of benefit to the stability of the ship owing to the limited width of the free water surfaces in the tanks used for the boiler feed water and for the passenger water service. Besides the continuous tank girders mentioned above there are five intercostal tank girders amidships on each side of the center keelson disposed as shown in Fig. 1 and additional girders are fitted beneath the engine rooms.

The spacing of the frames is 3 ft.

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

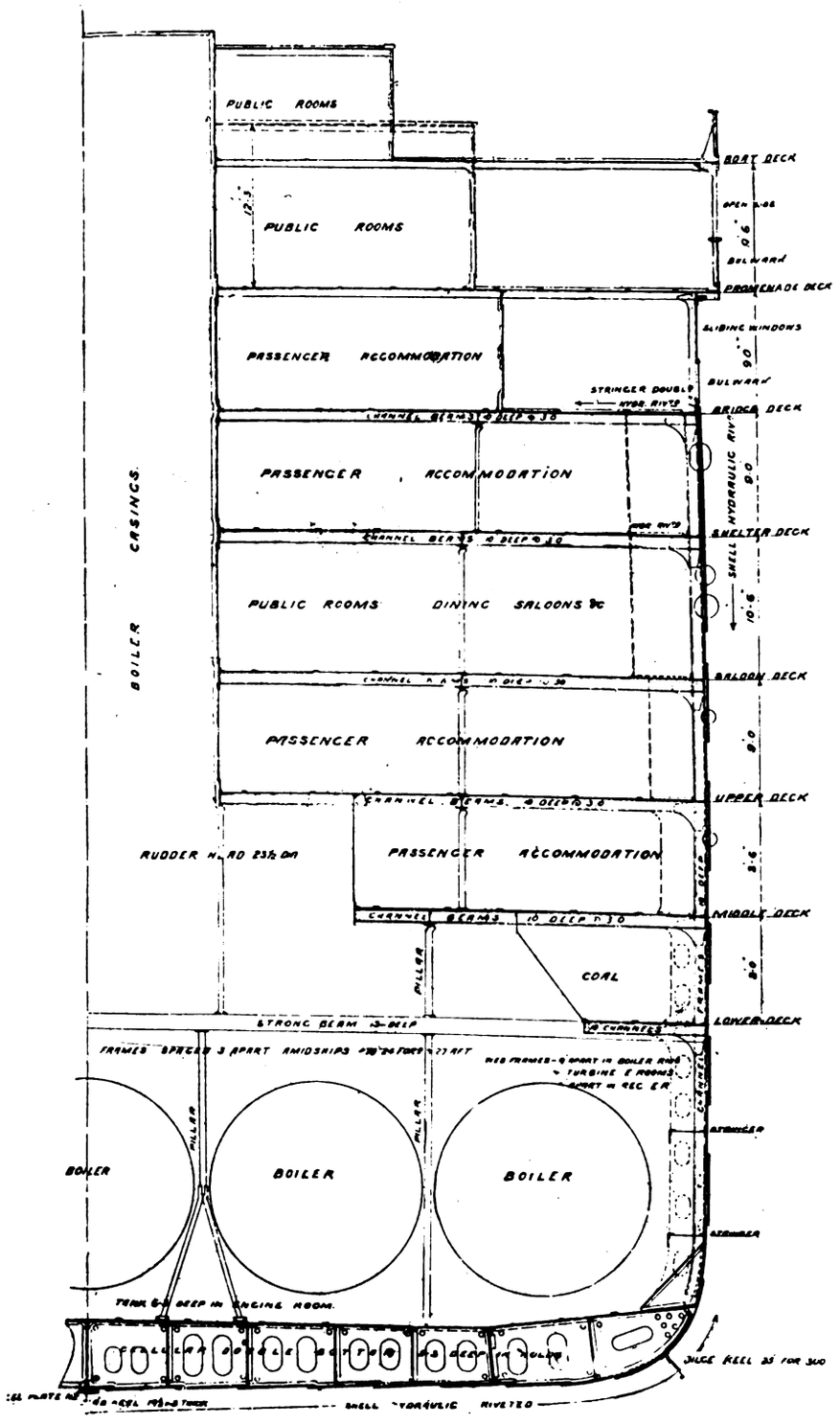


FIG. 1—MIDSHIP SECTION OF THE OLYMPIC.

amidships, reduced to 24 in. forward and 27 in. aft. The frames are of 10-in. channel sections except at the extreme ends, where a built section of frame and reverse bar is adopted. Web frames 30 in. deep are fitted on every third frame (9 ft. apart) in the boiler and turbine rooms, and on every second frame (6 ft. apart) in the reciprocating engine room. The channel frames extend from the tank top to the bridge deck, some of these bars having a length of about 66 ft. and weighing nearly one ton. The beams of the main structure are also of channel section 10 in. deep amidships, the largest being 92 ft. long and weighing 1¼ tons. The beams are connected to the frames by bracket knees. The transverse strength is also maintained by the watertight bulkheads, of which there are 15 in all, and a number of non-watertight bulkheads forming the cross bunker ends. The decks have a camber of 3 in.

The beams of the bridge, shelter, saloon and upper decks amidships are supported by four longitudinal girders which are in turn carried by solid round pillars spaced 9 ft. apart. Below the middle deck in the boiler rooms round pillars are also adopted, 9 ft. apart, in conjunction with strong beams carried across the lower deck level in way of each web frame. In the case of the inner rows the pillars are spaced out so that they do not interfere with the working passage. In the engine rooms and holds the pillars below the middle deck are wide spaced and of circular built section, the deck girders being increased in strength to suit the longer span. As the ship gets narrower at the ends, the number of rows of pillars is reduced.

Bilge keels 25 in. deep as shown in Fig 1 are fitted for about 300 ft. of the vessel's length amidships to minimize rolling in a seaway.

The two decks forming the superstructure of the ship and the navigating bridge are built to insure a high degree of rigidity. At the sides they are supported on built-up frames in line with the hull frames, but at wider intervals. The deck houses are specially stiffened by channel section steel fitted in the framework; and where, as on the boat deck, the public rooms pierce the deck, heavy brackets are introduced to increase the resistance to racking forces when the ship is steaming through a heavy seaway. The boat and promenade decks are increased to 94 ft. wide to enlarge the promenade space. All exposed decks are sheathed with wood.

There are half a million rivets in the double bottom of the ship weighing 270 tons, the largest rivets being 1¼ in. diameter. In the whole ship there are something like 3,000,000 rivets, weighing about 1,200 tons. Whenever possible hydraulic riveting has been adopted. Nearly the whole of the double bottom including the bottom shell plating up to the turn of the bilge and the topside shell and stringer plates and doublings have been riveted by hydraulic power. A hydraulic riveter at work on a vertical keel plate is shown in Fig 3, the adjacent portable furnace being used for heating the rivets.

The seams of the bottom plating are double riveted and of the topside plating treble and quadruple riveted. The butts of the bottom plating are overlapped and quadruple riveted as are the butts of the side plating except in the way of the topside shell and doublings where double straps are adopted.

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

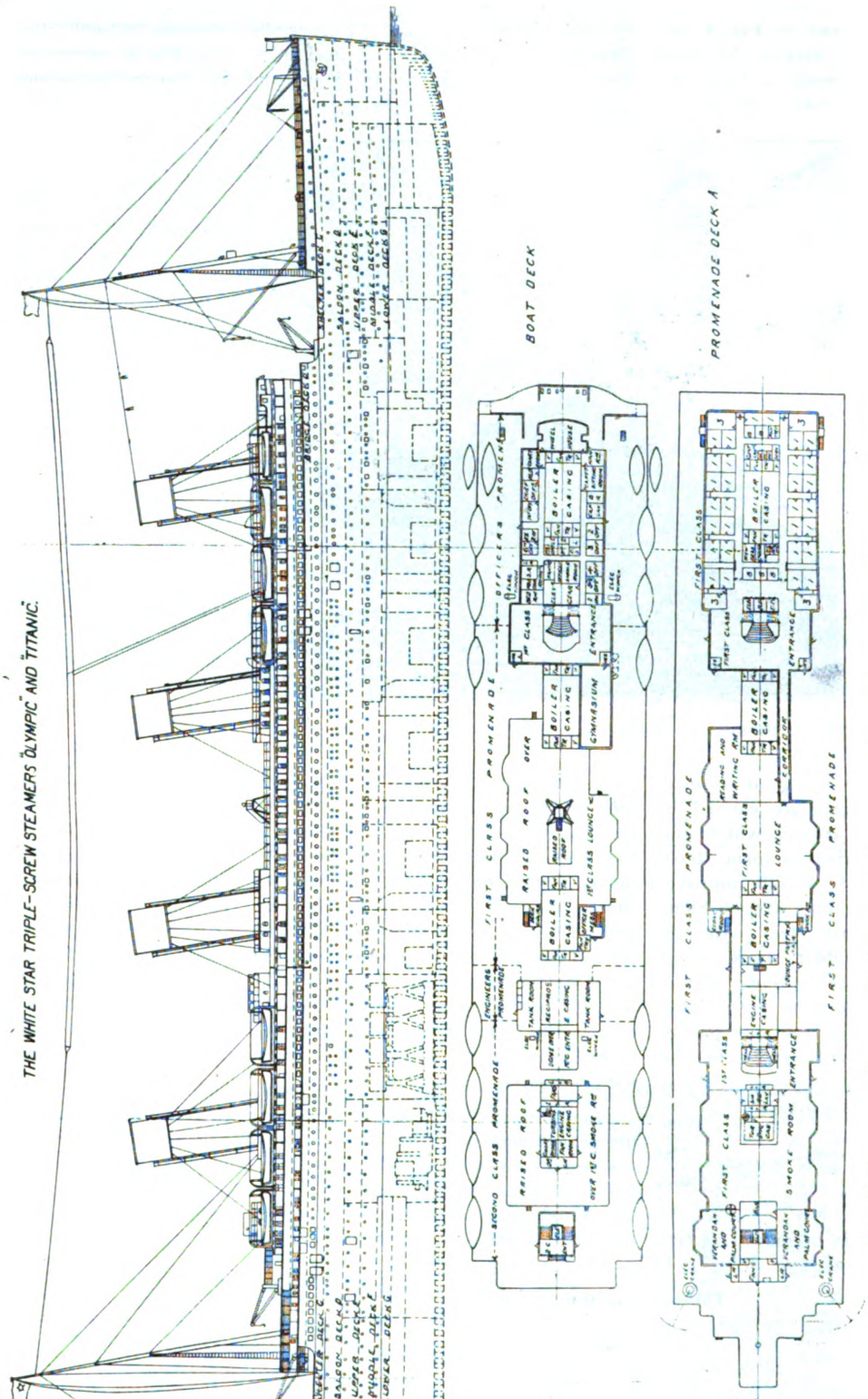


FIG. 2—INBOARD PROFILE AND BOAT AND PROMENADE DECK PLANS OF THE OLYMPIC.

Generated on 2024-08-28 11:22 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

The general arrangement of the stern castings is shown in Fig. 4. As the vessel has triple screws the stern frame is provided with a boss and aperture for the center or turbine propeller, while the wing or reciprocating propeller shafts are carried by boss are castings, around which the shell plating is carried to form "bossing" of Harland & Wolff improved type. All these castings are of Siemens-Martin mild cast steel with the exception of the rudder stock, which is of forged ingot steel. Some idea of the immense size of the stern castings will be obtained from the particulars of their weights given in the following table:

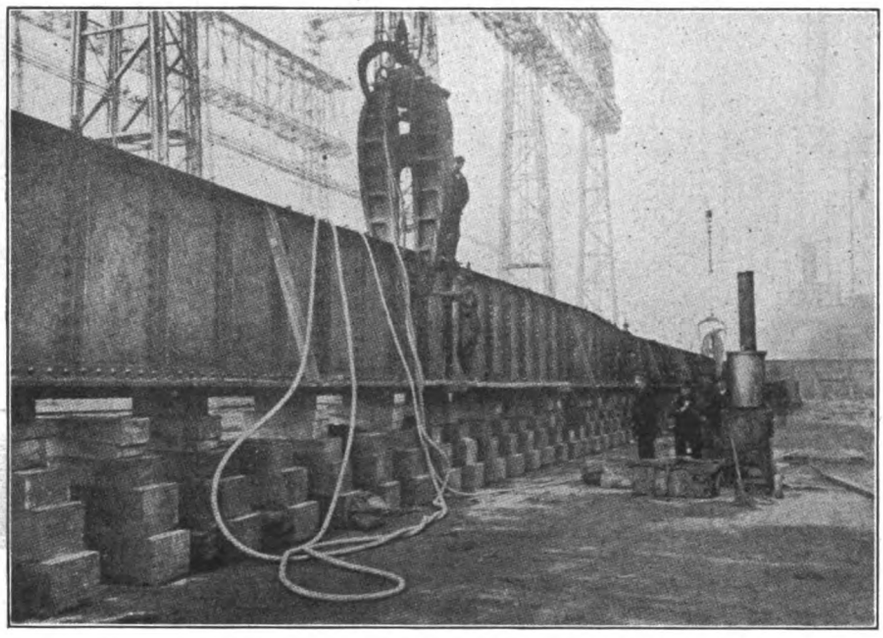


FIG. 3—HYDRAULIC RIVETER AT WORK ON THE VERTICAL KEEL PLATE.

Weights of Castings.

	Tons.
Stern frame (two pieces)	70
After brackets (two pieces)	73¾
Forward brackets (two pieces)	45
Rudder (six pieces)	101¼
Stem bars	7¼
Stem connecting piece to keel	3½

The stern frame is of dished section 18 in. x 11 in. increased to 21 in. x 11 in. solid in way of the aperture and is in two pieces connected by specially designed scarphs, as shown in Fig. 4. The total height is 68 ft. 3 in. and length 37 ft. 4 in. A large palm is provided at the forward end to provide a strong connection to the after boss arms and the main structure of the vessel. The scantlings are connected with iron rivets 2 in. diameter, there being 59 rivets in the forward and 53 rivets in the after scarph with a total weight exceeding one ton. The great care exercised in fitting these to insure a strong connection is suggested by the fact that they were all turned and fitted and specially closed with rams.

The after boss arms are in two pieces, connected at the center line of the vessel by strong deep flanges to form a continuous web right across the ship. This web again is riveted to a 2-in. steel plate of special quality extending from side to side of the vessel. The immense size of these castings is well illustrated by Fig. 5 and Fig. 6, which also show the holes for the rivets by means of which they are securely attached to the stern frame, shell plating, floors and framing of the ship. The centers of the wing shafts are 39 ft. at the after brackets and the boss arm 4 ft. 10 in. diameter. The manner in which the shell plating is carried around the bossing is well shown in Fig. 7. The introduction of the forward brackets as a means of increasing the strength of the ship at this part is noteworthy. In this case also the two arms have been made in separate pieces and connected by bolts at the center line of the ship as will be seen from Fig. 4, the whole being securely attached to the ship's plating and framing.

The rudder (see Fig. 4) is of solid cast steel built in five sections and coupled together with bolts varying from 3½ in. to 2 in. diameter. The rudder stock is of forged steel 23½ in. diameter and was made from a special ingot of the same quality as used for gun jackets. On the completion of the forging an inspection hole was bored through the stock of the rudder in order to insure there were no flaws. The length over all of the rudder is 78 ft. 8 in. and width 15 ft. 3 in. The pintles are 11 in. diameter of hard steel and are arranged each to take their own proportion of the rudder weight, bearing upon hard steel discs inside the stern post gudgeons. A special feature is that the bottom of the rudder is so arranged that screw jacks can be employed for lifting it in dry dock.

The stem bar is of the usual rolled section and is connected by a steel casting to the center keelson and keel of the ship. A special feature is the cast steel hawse pipe attached to the upper portion of the stem bar to take the steel wire hawser provided for use with a center bower anchor. The

Table I.—Showing the Growth of Steamships Since 1858.

Name.	Builders.	Date.	Length. Ft.	Beam. Ft.	Beam. In.	Depth. Ft.	Depth. In.	Draught. Ft.	Draught. In.	Displacement. Tons.	Gross Tonnage.	Engines.	I. H. P.	Speed, knots.
Great Eastern	Scott Russell	1858	680	83	0	57	6	25	6	27,000	24,360	Pad. & Sc.	7,650	14.5
Paris and New York	Clydebank Works	1888	528	63	0	41	10	23	0	13,000	10,499	Reciprocating	20,600	21.8
Teutonic and Majestic	Harland & Wolff	1890	565	57	6	42	2	22	0	12,000	9,686	Reciprocating	19,500	21.0
Furst Bismarck	Vulcan Co., Stettin	1891	503	57	3	38	0	22	6	10,200	8,000	Reciprocating	16,412	20.7
Campania and Lucania	Fairfield Co.	1893	600	65	0	41	6	23	0	18,000	12,500	Reciprocating	30,000	22.01
St. Louis and St. Paul	Cramp Co., Philadelphia, U. S. A.	1895	536	63	0	42	0	26	0	16,000	11,629	Reciprocating	18,000	21.08
Kaiser Wilhelm der Grosse	Vulcan Co., Stettin	1897	625	66	0	43	0	28	0	20,880	14,349	Reciprocating	30,000	22.5
Oceanic	Harland & Wolff	1899	685	68	5	49	0	32	6	28,500	17,274	Reciprocating	27,000	20.72
Deutschland	Vulcan Co., Stettin	1900	662.9	67	0	44	0	29	0	23,620	16,502	Reciprocating	36,000	23.5
Kronprinz Wilhelm	Vulcan Co., Stettin	1901	663 o. a.	66	0	43	0	29	0	21,300	14,908	Reciprocating	36,000	23.5
Kaiser Wilhelm II	Vulcan Co., Stettin	1903	678	72	0	52	6	29	0	26,000	19,361	Reciprocating	38,000	23.5
La Provence	Chantiers de Penhoet, St. Nazaire	1906	597	64	7½	41	8	26	9	19,160	13,750	Reciprocating	30,000	22.05
Kronprinzessin Cecilie	Vulcan Co., Stettin	1907	678	72	0	52	6	29	0	26,000	19,400	Reciprocating	38,000	23.5
Adriatic	Harland & Wolff	1907	709	75	6	56	9	.....		40,790	24,541	Reciprocating	16,000	17
Lusitania	Clydebank Works	1907	760	88	0	60	0	....		44,060	30,822	Turbines	70,000	25.5
Mauretania	Swan, Hunter & Wigham Richardson, Ltd.	1907	760	88	0	60	6	.....		44,640	31,938	Turbines	70,000	26.0
La France	Chantiers de Penhoet, St. Nazaire	1911	685	75	5	52	10	29	6	27,000	23,000	Turbines	45,000	23.5
Olympic and Titanic	Harland & Wolff	1911	850	92	0	64	3	.....		60,000	45,000	Recip'g & Turb.	46,000	21

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

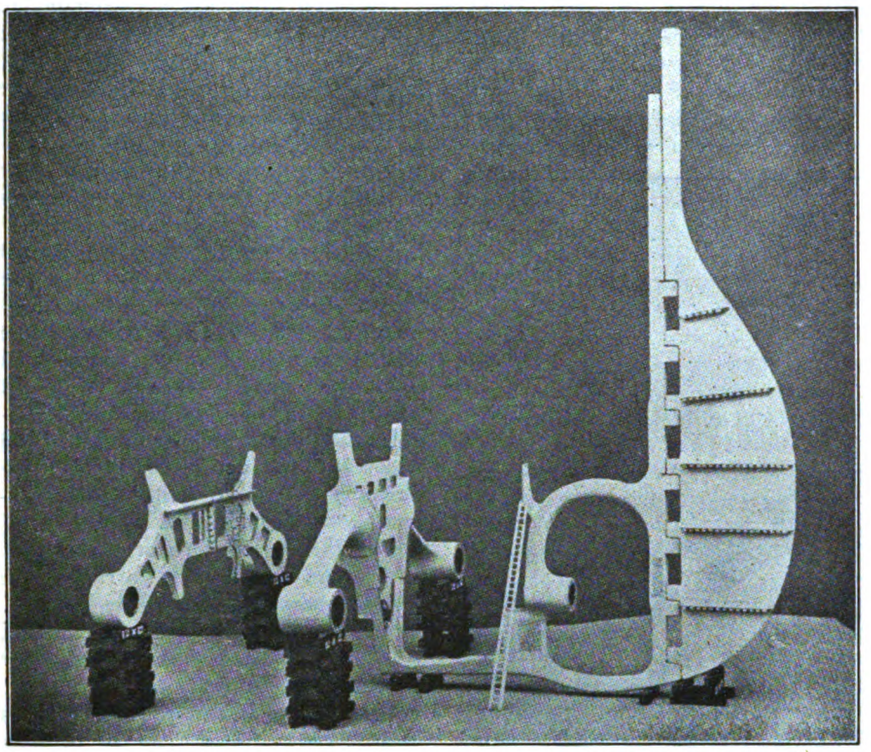


FIG. 4—ARRANGEMENT OF STERN CASTINGS.

weight of this casting is 6¼ cwt. The watertight subdivision of the Olympic is very complete, and is so arranged that any two main compartments may be flooded without in any way involving the safety of the ship. There are 15 transverse watertight bulkheads extending from the double bottom to the upper deck at the forward end of the ship and to the saloon deck at the after end—in both instances far above the water line. The room in which the reciprocating engines are placed is the largest of the compartments, being 69 ft. long, while the turbine room is 54 ft. long. The boiler rooms are generally 57 ft. long with the exception of that nearest the reciprocating engine department. The holds are 50 ft. long.

The watertight doors giving communication between the various boiler rooms and engine rooms are arranged on the drop system. They are of Harland & Wolff special design of massive construction, as will be seen from Fig. 8, and are provided with oil cataracts governing the closing speed. Each door is held in the open position by a suitable friction clutch, which can be instantly released by a powerful electro magnet controlled from the captain's bridge so that in the event of accident or at any time when it may be considered advisable the captain can, by simply moving an electric switch, instantly close the doors throughout and make the vessel practically unsinkable. Each door can also be closed from below by operating a lever fitted in connection with a friction clutch. As a further precaution floats are provided beneath the floor level, which, in the event of water accidentally entering any of the compartments automatically lift and thereby close the doors opening into that compartment, if they have not already been dropped by those in charge of the vessel.

A ladder or escape is provided in each boiler room, engine room and similar watertight compartment in order that the closing of the doors shall not imprison the men working inside, but the risk of this happening is lessened by electric bells placed in the vicinity of each door which ring prior to their closing, and thus give warning to those below.

The keel of the Olympic was laid Dec. 16, 1908. She was launched on Oct. 20, 1910. The leading particulars of the launching are of interest and are given in the accompanying table:

Table III.

Launching Particulars.

Draught, forward, 15 ft. 8 in.; aft, 20 ft.; mean, 18 ft. ½ in.	
Launch weight, excluding cradle, tons	24,600
Length of standing ways, feet, about	850
Length of sliding ways, feet, about	750
Standing ways, of oak	6 ft. 9 in. wide
Sliding ways, of pitch pine	6 ft. 3 in. wide
Pressure per square foot of bearing surface, tons	2.6
Declivity of ways, ⅛ in. per foot for forward half length, increasing to ¼ in. per foot for the remainder.	
Quantity of lubricants used:	
Tallow, tons	15
Tallow and train oil, mixed, tons	5
Soft soap, tons	3
Time from start till vessel left ways, seconds	62
Maximum velocity, knots per hour	12½
Drags, three anchors on each side and 80 tons cable, all disposed in the bed of the river.	

Work of installing the propelling machinery began immediately after the launching. The 200-ton floating crane belonging to the builders was employed for this purpose and may be seen putting a boiler aboard as shown in Fig. 9. This crane, which is one of the largest floating cranes in existence, can lift a weight of 150 tons to a height of 149 ft. at a radius of 100 ft. with a list of only 4 degrees, while the small hook can lift 50 tons at a

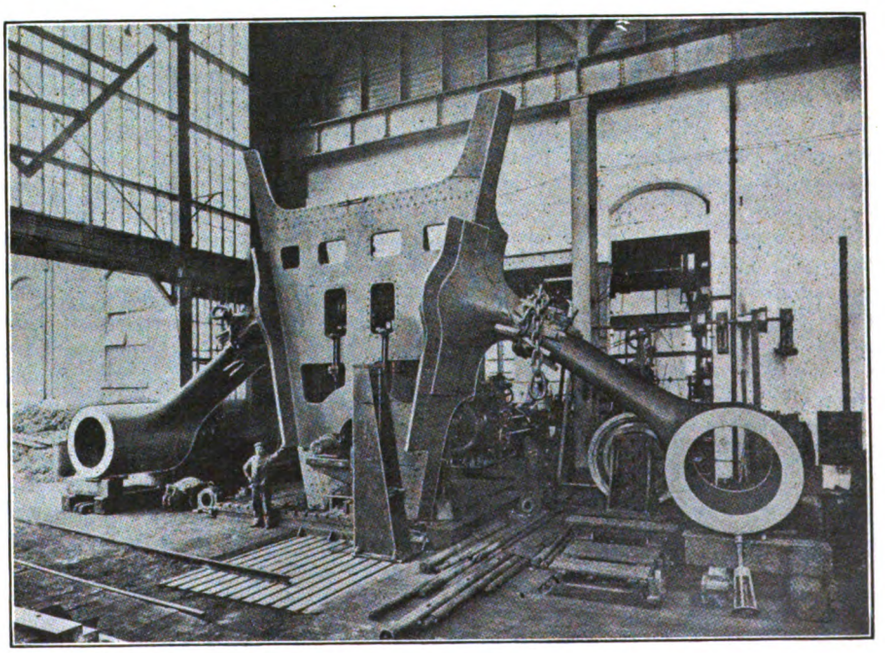


FIG. 5—AFTER PROPELLER BRACKETS.

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

radius of 140 ft. Figure 9 also shows the strong steel lattice girder gangway which was used for communication from the wharf to the ship, as well as one of the rafts which were provided at the forward and after ends to keep

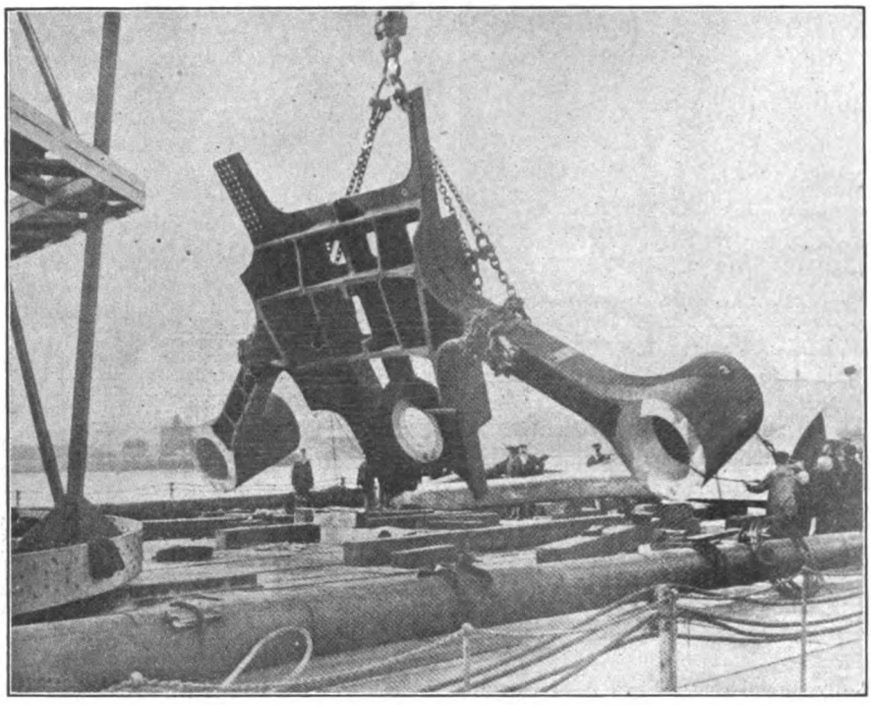


FIG. 6—AFTER PROPELLER BRACKETS BEING WEIGHED.

the vessel the required distance from the quay.

The Olympic docked on April 1, 1911, in the new graving dock belonging to the Belfast Harbor Commissioners, which has the distinction of being the largest graving dock in the world at the present time. The Olympic was completed by the end of May, 1911, the work of fitting out having been finished in just over seven months from the date of launching, a remarkable performance when it is considered that the builders had under way six other large passenger boats, including the Olympic's sister, the Titanic.

The combination of reciprocating engines with a Parsons low pressure turbine, which was adopted for the propelling machinery of the Olympic, is one of the latest examples of progress in marine engineering. The superior economy of the system is due to the fact that increased power is obtained with the same steam consumption by expanding the steam in the low pressure turbine beyond the limits possible with the reciprocating engine.

Nearly the whole of the space beneath the upper deck (E) is occupied by the steam generating plant, coal bunkers and propelling machinery. The boiler installation and bunkers occupy six watertight compartments, having a total length of 320 ft. The engine rooms take up a further length of 123 ft. and the electric deck engine and shaft tunnels occupy the remaining portion of the ship below the orlop deck. Of the four funnels provided the foremost three are required for the boiler rooms, while the fourth is used for ventilating and has also built into it the chimney from the extensive galleys.

As known, the Olympic is a triple-screw steamer, each wing propeller being driven by one set of reciprocating engines and the center propeller by the low pressure turbine. Owing to the great size of the units it was found necessary to place the latter in a separate compartment abaft the reciprocating engine room and divided from it by a watertight bulkhead. The reciprocating engine room is placed immediately abaft the aftermost boiler room and contains in addition to the main engines a large amount of auxiliary machinery. In the wings are placed the main feed and hotwell, bilge, sanitary, ballast and fresh water pumps, the auxiliary condenser, the surface heater and contact heater, which latter is placed high up in the casing at the center line; while on the port side space has been found for the extensive refrigerating plant and on the starboard side for a large engineer's workshop situated on a flat some distance above the floor level and well equipped with machine tools.

The after engine room contains in addition to the low pressure turbine the main condensers with their circulating pumps, twin air pumps, the evaporators and distilling plant, the forced lubrication pumps with oil coolers and the pump for circulating water through them, besides several pumps for bilge and other purposes.

Altogether there are 24 double-ended and five single-ended boilers in the vessel, designed for a working pressure of 215 lbs., which it is anticipated will be maintained under natural draft conditions. The aftermost or No. 1 boiler room contains the 5 single-ended boilers, boiler rooms 2, 3, 4 and 5 contain five double-ended, and the foremost or No. 6 boiler room contains four double-ended boilers. Owing to the great width of the ship it was found possible to arrange five boilers abreast, as shown in Fig. 10, except in No. 6 boiler room, where, owing to increased fineness, only four abreast could be fitted.

Each of the double-ended boilers is 15 ft. 9 in. diameter and 20 ft. long and contains six furnaces, while the single-ended boilers which are of the same diameter as the double-ended, but are 11 ft. 9 in. long, contain three furnaces, so that the total number of furnaces is 159, the latter all of the Morison type. The shells of the single-ended boilers are formed in one strake, the double-ended boilers having as usual, three strakes. All the shell plates are of mild steel 1 11/16 in. thick.

The arrangement of uptakes by which the smoke and waste gases are conveyed to the funnels is necessarily of a very elaborate nature, no less than 20 branches being required to one funnel in the case of boiler rooms 3 and 4. The branches from adjoining boiler rooms are united immediately above the watertight bulkhead separating the rooms, the bulkhead thus forming a valuable support to the up-

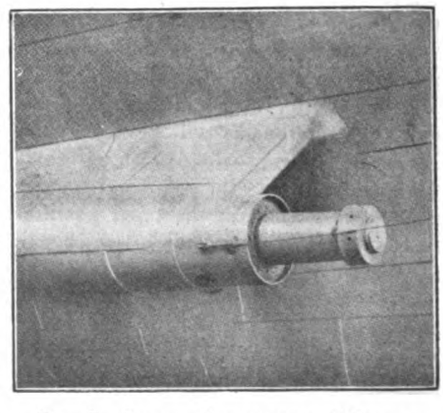


FIG. 7—SHELL PLATING IN WAY OF "BOSSING."

Generated on 2024-08-28 11:18 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

takes and funnel above. One set of uptakes is shown in Fig. 11 and well illustrates their numerous ramifications. The four funnels have an elliptical cross section and measure 24 ft. 6 in. x 19 ft. The average height above the level of the furnace bars is 150 ft. Figure 12 gives a striking view of the last funnel of the Olympic leaving the shops.

The arrangements for loading and storing coal and feeding the coal to the stokeholds are the result of great experience. The bunkers consist of 'tween deck space on each side of the ship between the lower and middle decks into which the coal is first shipped and from thence distributed into the cross bunkers extending the full width of the vessel in each boiler room. The stokers obtain the coal from doors in the cross bunker end bulkheads at the stokehold level immediately opposite the furnaces, as shown in Fig 13, an arrangement which reduces the amount of handling of fuel for each boiler to a minimum. A further advantage of the bunker arrangement is that no watertight doors are required in the bunker ends. as each set of boilers has the necessary coal supply provided in the same water-tight compartment, the watertight bulkheads dividing the boiler rooms being placed at the center of the cross bunkers.

The arrangement for discharging ashes consists of ten See ash ejectors, of which there are two in each large boiler room, placed as shown in Fig. 13. The ash ejectors are worked by the large duplex feed pumps placed in a separate room adjoining each boiler room. One of the See ash ejectors is shown on the right hand of Fig. 10. The ashes are discharged by shoveling them into the hopper placed on the stokehold floor whence they are drawn down by a rush of air to a water jet, which is being discharged through the long enclosed pipe shown at a pressure of about 150 lbs., the jet being maintained by the pump already referred to. The water jet carries the ashes up the inclined pipe till, at the upper end, they are deflected and discharged well clear of the ship's side.

No forced draft is provided, it being the practice of the White Star Line to have forced ventilation only in the boiler rooms of their ships. For the latter purpose 12 Sirocco fans, two for each boiler room, have been supplied, fitted with motors. The fans are placed at the middle deck level and draw in air through ventilating shafts from the boat deck, supplying the same through trunks led down the bulkheads to the level of the furnaces. Eight of them are 55 in. diameter, two 50 in. diameter and two 40 in. diameter.

The steam supply is carried from the boilers to the engines by two main steam pipes made of welded steel with a butt strap riveted over the weld from which branches are carried to the various boilers and which gradually increase in diameter as they approach the engine room forward bulkhead. On the forward side of this bulkhead on each pipe line is placed a balanced emergency stop valve (see Fig. 13), which can be closed in a few seconds in case of need. On the after side of the same bulkhead are the main stop valves, 21½ in. diameter (see Figs. 14 and 15), each provided with a large separator and a cross connection which allow either range of piping to be used for either or both engines. The main stop valves are of the equilibrium double beat type and are operated by hand wheels and screws from the starting platform, which is situated in the center of the reciprocating engine room.

From the stop valves the steam passes to the reciprocating engines and after expanding through the various stages is led from the low pressure cylinders of each set by a 61 in. pipe to a huge change-over valve 64 in. diameter situated on each side just abaft the forward bulkhead of the turbine room. By means of these change valves the exhaust steam is deflected downwards through large strainers to the turbine or directly across to the condenser. The arrangement will be better understood by reference to Figs. 14, 15 and 16, from which it will be seen that these parts are in duplicate, there being an exhaust pipe, change-over valve and steam admission to the turbine and a

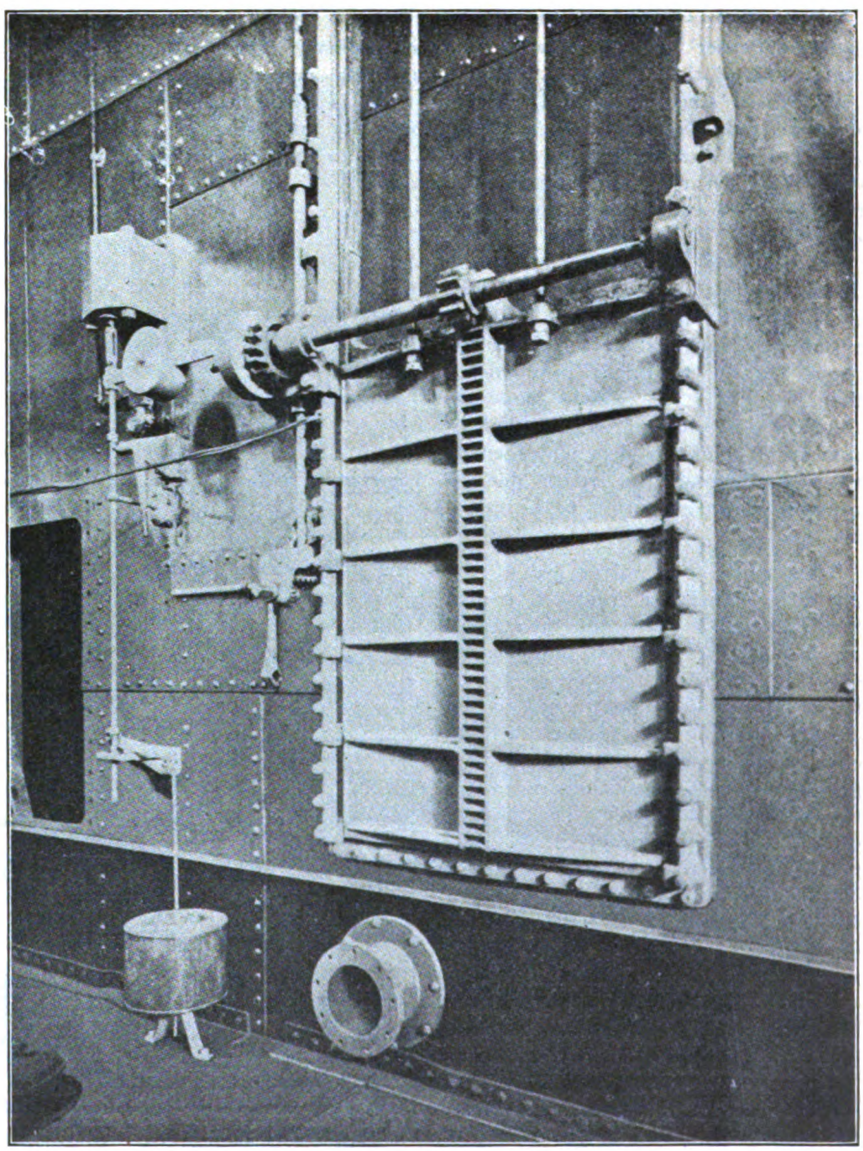


FIG. 8—DOUBLE CYLINDER WATER-TIGHT DOOR.

Generated on 2024-08-28 11:18 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

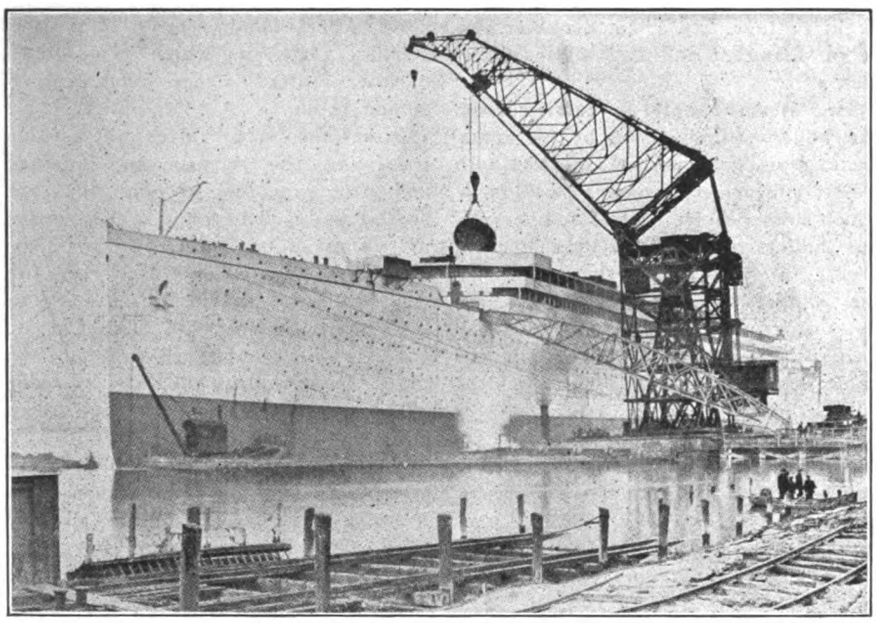


FIG. 9—FLOATING CRANE LIFTING A BOILER ON BOARD THE OLYMPIC.

main condenser on each side of the center line of the ship. The exhaust pipes are of steel, lap-welded, with a strap riveted over the weld and are protected with concertina or bellows joints between each rigid connection to allow for expansion without endangering the airtightness of the pipes leading to the condensers. These joints consist of two thin steel discs riveted together at their periphery through a steel ring and are about 2 ft. 6 in. larger in diameter than the pipes to which they are connected by flanges. The slightly conical form of the disc plates enables any difference in length due to contraction or expansion to be taken up.

The change-over valves are of the piston type with a ring of special form. Fig. 17 illustrates the casing of one of these valves and clearly shows the purpose. Steam is admitted to the strainer and thence to the turbine when the piston of the change-over valve is at its highest position and to the condenser when the piston is lowered. The pistons of both change-over valves are connected to levers, the other ends of which (Fig. 16) are controlled by a Brown's hydraulic reversing engine of the type adopted in reciprocating engine practice, which is in turn controlled by a lever on the starting platform close to the main reversing lever. When the order to reverse is given the engineer at once pulls over the change-over valve reversing lever, the steam passes directly from the low pressure cylinder to the condensers and the machinery is handled as an ordinary reciprocating installation until the maneuvering is finished and steam is again admitted to the turbine by restoring the change-over valves to their original position. From the turbine the steam exhausts to each condenser through large welded steel reduction pipes of rectangular section. Each pipe is provided with an immense sluice valve 8 ft. 6 in. by 10 ft. 6 in. to shut off the turbine entirely from the condensers in case of accident to the former. These sluice valves are electrically operated, the closing slides, which are in two pieces, being worked together by worm and rack gear. To control the steam supply in case of the propellers ramming or in the event of a breakdown, each reciprocating engine is provided with an Aspinall governor, which works in connection with a Brown's engine connected to the throttle valve, while in the case of the turbine a ball governor is provided which controls the Brown's engine operating the change-over valves.

In regard to the auxiliary steam pipe system it may briefly be said that the five single-ended boilers in No. 1 boiler room are arranged for running the auxiliary machinery when in port, while two boilers in each of the other compartments have separate

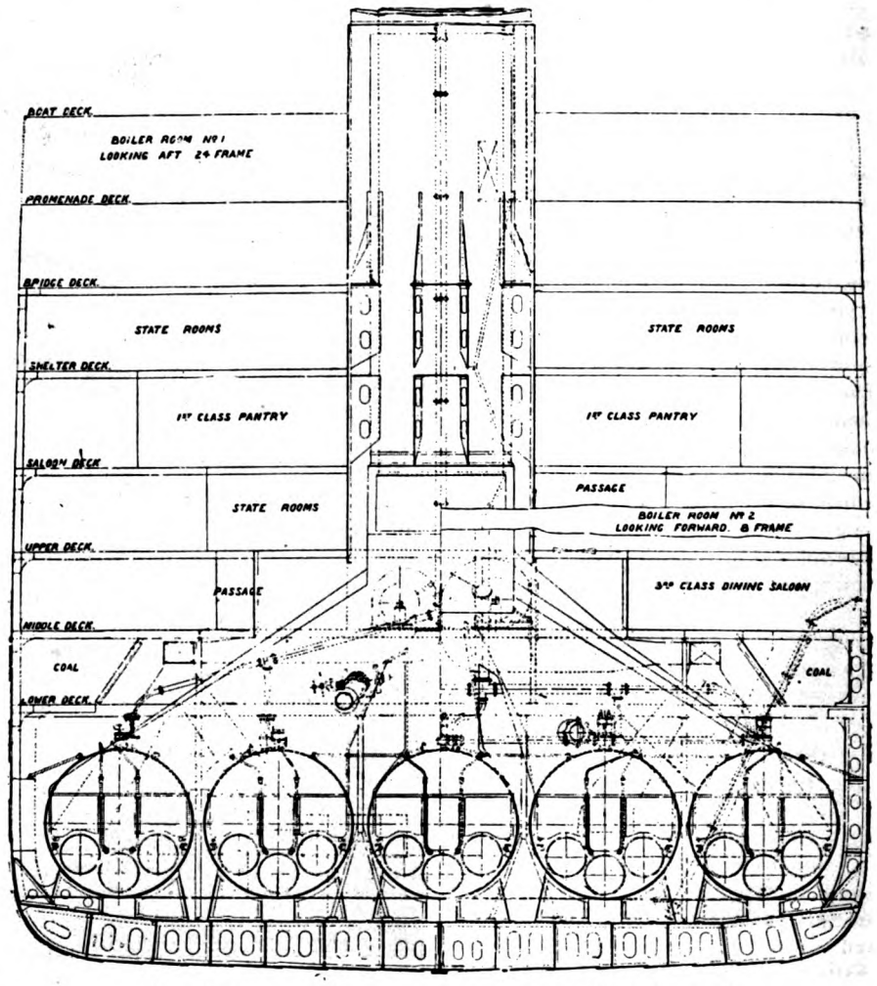


FIG. 10—SECTION THROUGH BOILER ROOMS NOS. 1 AND 2.

Generated on 2024-08-28 11:16 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

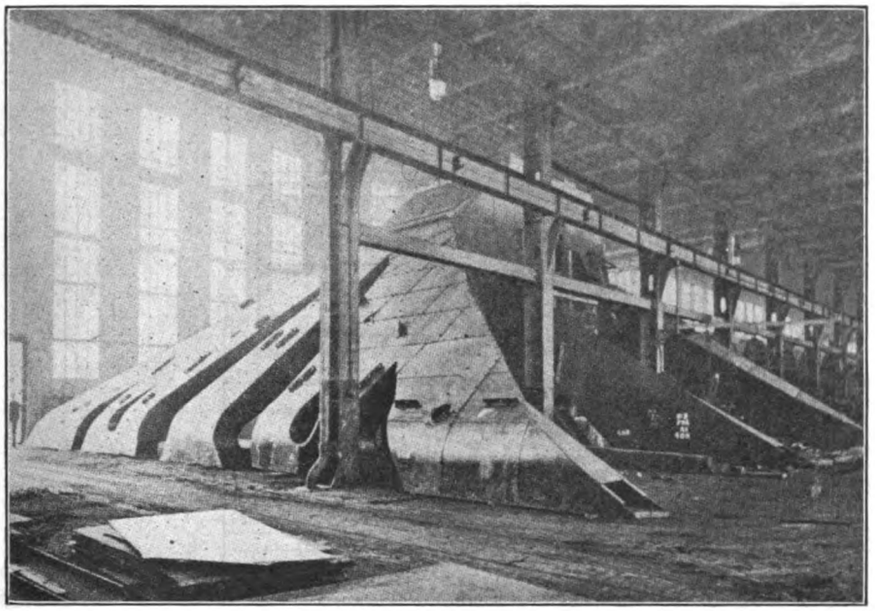


FIG. 11—SET OF BOILER UPTAKES.

steam leads to the auxiliary machinery, which includes the very large dynamo engines. The only auxiliaries exhausting into the main condensers are the steering engines. The electric engines exhaust through an independent pipe to the surface heater and all other auxiliaries exhaust into the contact heater. For port use a large auxiliary condenser is fitted.

The two sets of reciprocating engines are of the four-cylinder, triple-expansion, direct-acting, inverted type balanced on the Yarrow, Schlick & Tweedy system and are arranged to take steam at 215 lbs. per square inch and exhaust at a pressure of about 9 lbs. per square inch absolute. The cylinders are 54 in., 84 in., 97 in. and 97 in. diameter with a stroke of 75 in. in all cases and each set of engines is expected to indicate about 15,000 H. P. at 75 revolutions per minute. A section through the reciprocating engine room is shown in Fig. 18. From a reference to Fig. 14 it will be seen that the columns are of the split type, each column near its center being divided into two sections, which are well spread out to form a strong base. The engine bed plate weighs 195 tons, the columns 21 tons each and the heaviest cylinder with liner 50 tons. The two low pressure cylinders are placed one at each end of each set of engines, as is usual with the balancing system adopted, the order of the cylinders beginning forward being low pressure, high pressure, intermediate pressure and low pressure (see Figs. 14 and 15).

Each low pressure cylinder is provided with two slide valves worked from the same crosshead by a single set of double bar links and eccentrics. The high pressure cylinder is provided with a single piston valve and the intermediate pressure cylinder with two piston valves similarly operated to the twin slide valves on the low pressure cylinders. The valves are operated by Stephenson link motion. The reversing gear for each set is operated by a Brown engine of the usual type and in order that the latter may always be of full stroke, whatever the cut-off required in the various cylinders, each set of links has its own separate adjustment. Elaborate electrically operated lifting gear for the cylinder covers has been necessitated owing to the great weights to be handled while in addition several electric winches have been provided to deal with the smaller weights. The turning engines are steam driven.

The low pressure turbine, which is of the usual Parsons type, will take steam from the reciprocating

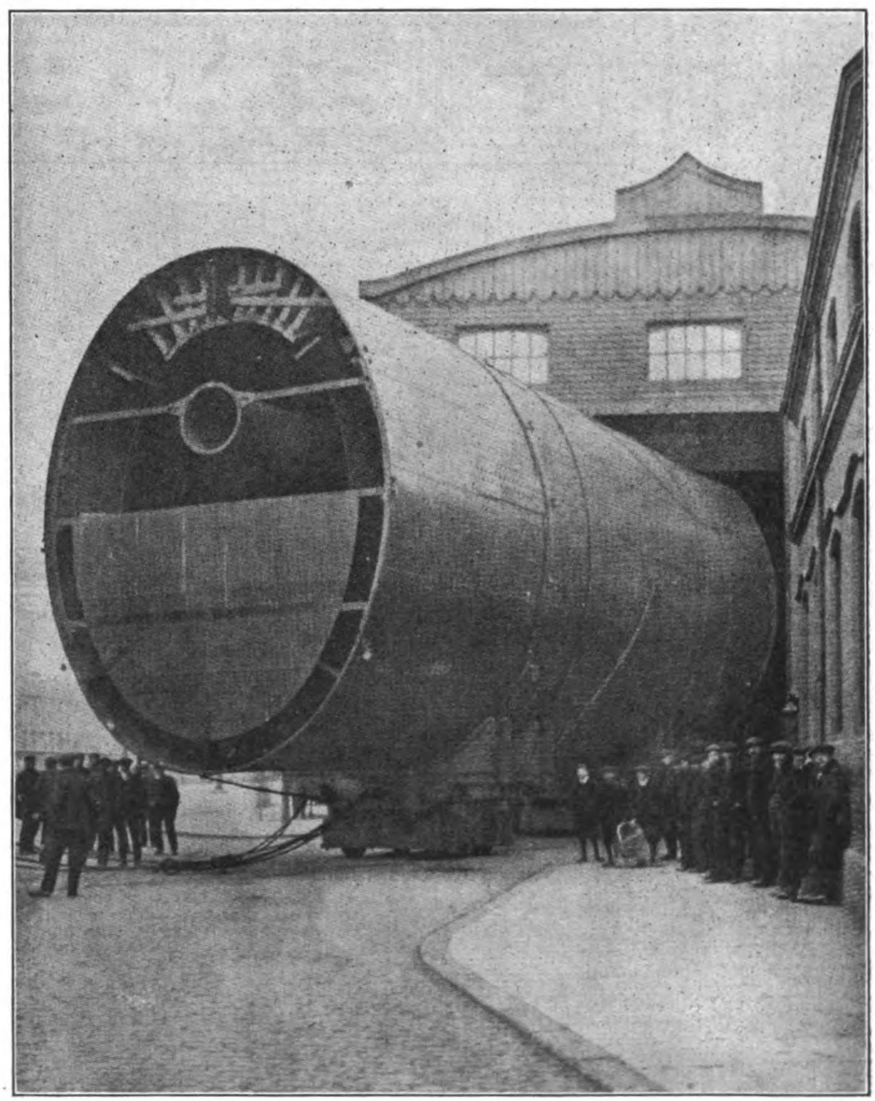


FIG. 12—LAST FUNNEL OF THE OLYMPIC LEAVING THE SHOPS

Generated on 2024-08-28 11:12 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

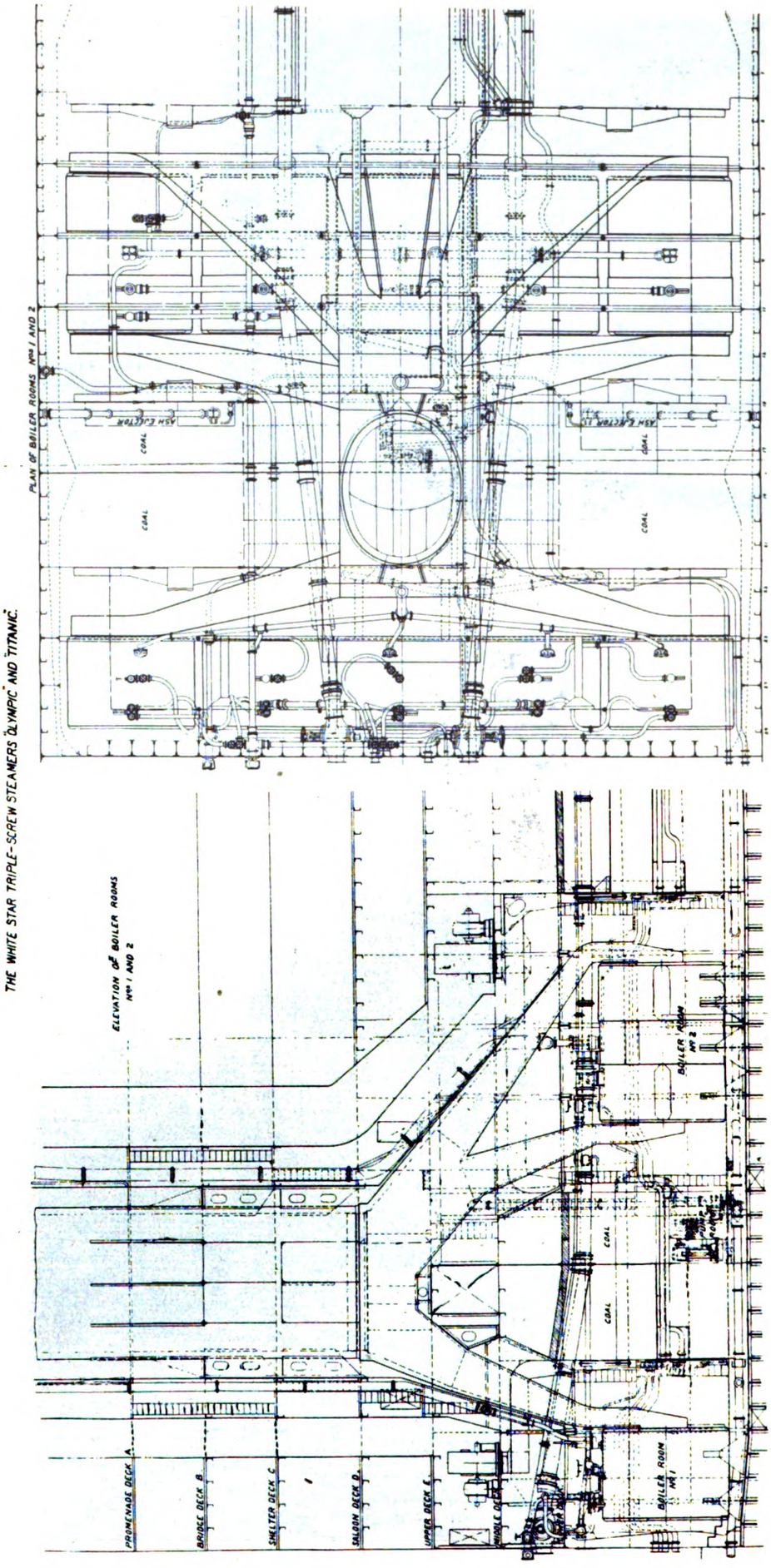

THE WHITE STAR TRIPLE-SCREW STEAMERS "OLYMPIC" AND "TITANIC".
PLAN OF BOILER ROOMS Nos 1 AND 2
ELEVATION OF BOILER ROOMS Nos 1 AND 2
PROMENADE DECK A
BRIDGE DECK B
SHELTER DECK C
SALOON DECK D
UPPER DECK E
BOILER ROOM No 2
BOILER ROOM No 1
COAL
ASH EJECTOR

FIG. 13—ELEVATION AND PLAN OF BOILER ROOMS NOS. 1 AND 2.

Generated on 2024-08-28 11:20 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

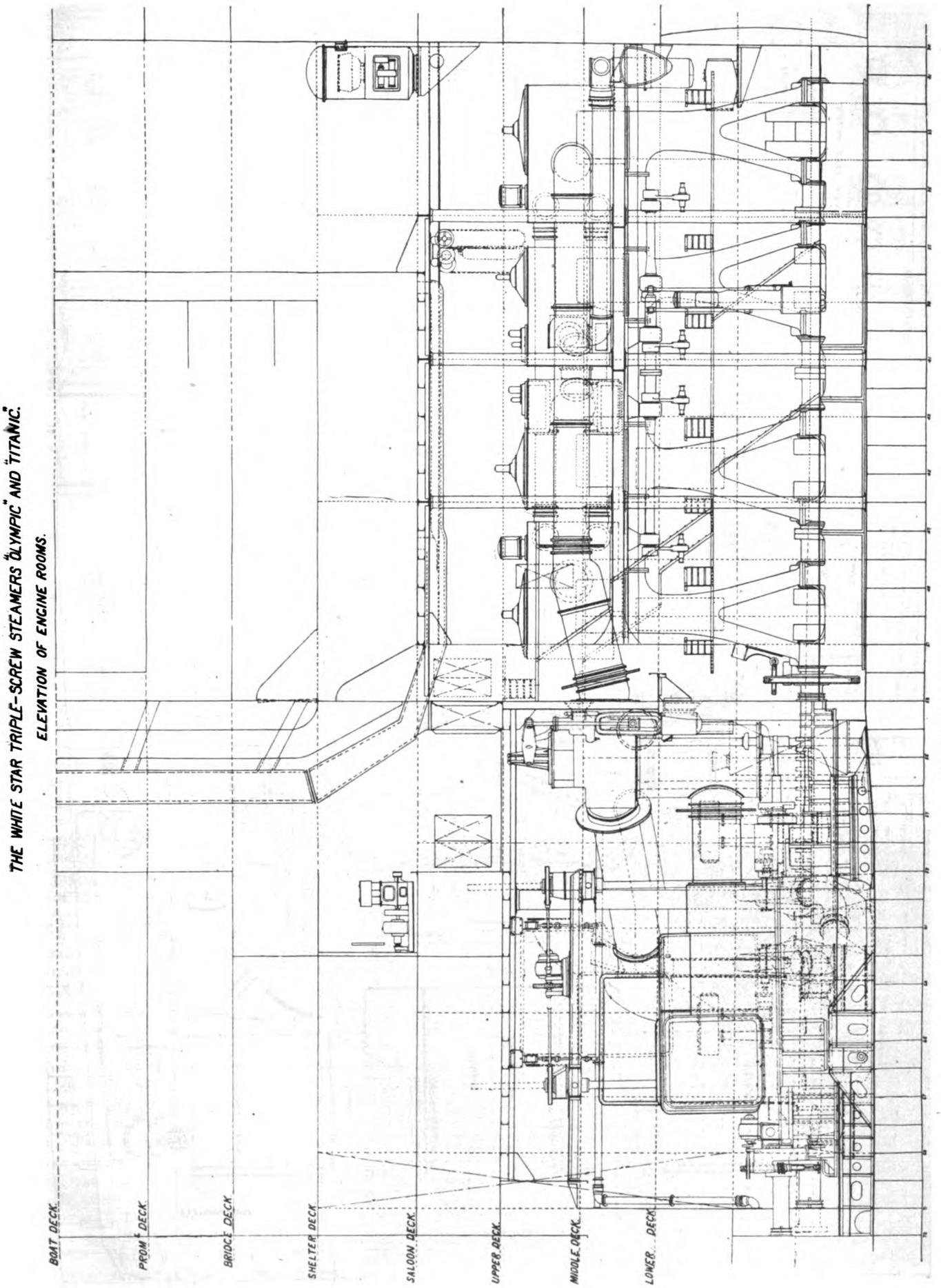


FIG. 14—ELEVATION OF ENGINE ROOMS.

Generated on 2024-08-28 11:14 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

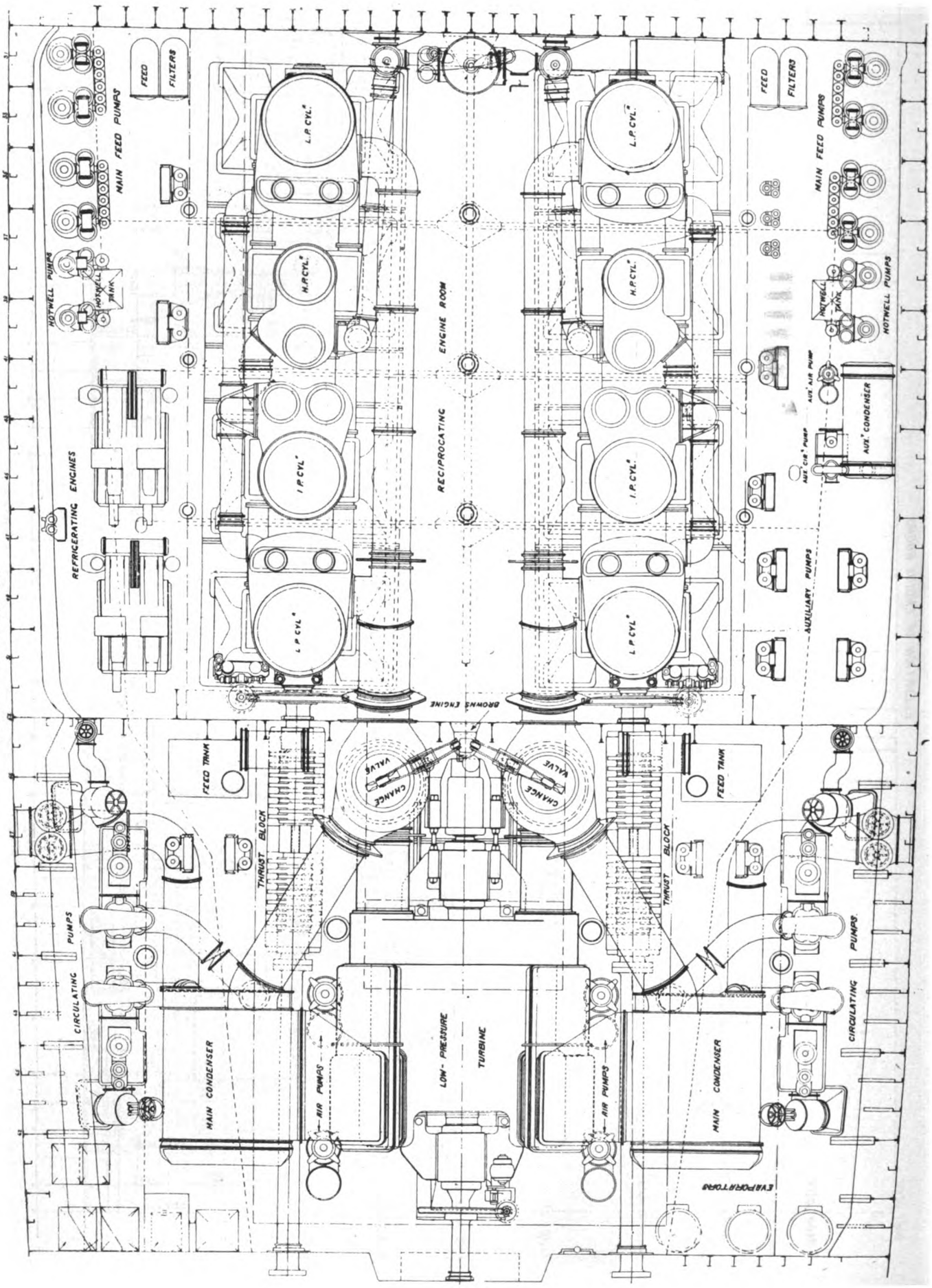


FIG. 15—PLAN OF ENGINE ROOMS.

Generated on 2024-08-28 11:18 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

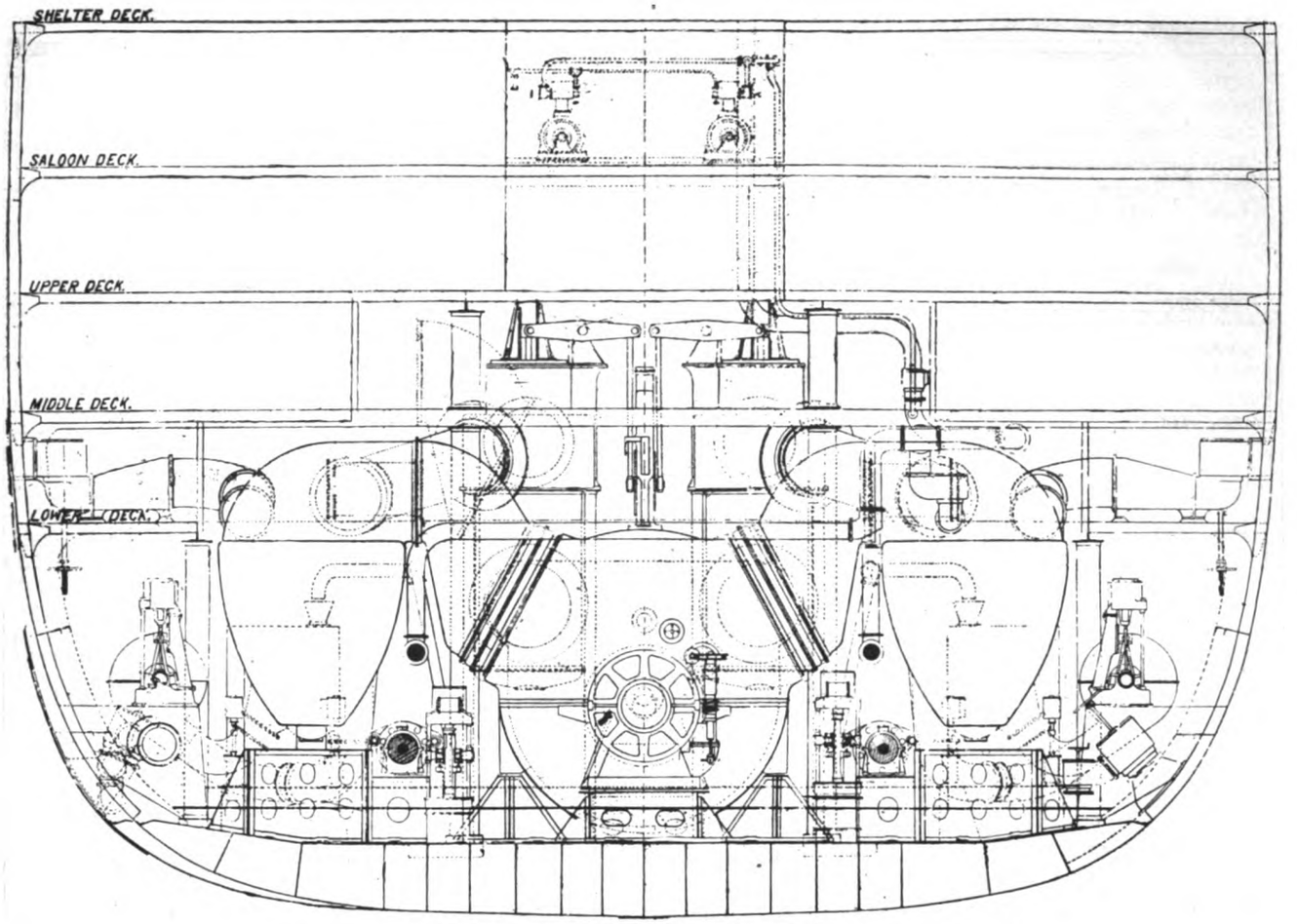


FIG. 16—SECTION THROUGH TURBINE ROOM

engines at about 9 lbs. absolute pressure and exhaust at 1 lb. absolute. It is intended to develop about 16,000 shaft H. P. while running at 165 revolutions per minute. No astern turbine has been fitted and the center shaft is put out of action when the ship is being maneuvered. The turbine is of immense size, its weight complete being no less than 420 tons. The rotor is 12 ft. diameter and 13 ft. 8 in. long between the extreme edges of the first and last ring of blades. It consists of steel forgings built up in the usual way. The blading is of the Parsons lace type with distance pieces at the roots and binding soldered on the edge. The blades range in length from 18 in. to 25½ in. The complete rotor has a weight of about 130 tons. The crank and thrust shafts for the reciprocating engines are 27 in. diameter with a 9 in. hole through the center. The line shafting is 26½ in. and tail end shaft 28½ in. diameter, with a 12-in. hole through the center. The crank shaft through each engine weighs 118 tons. The thrust shafts have 14 collars, arranged seven at each end with a space for an intermediate bearing at the middle. Each tail shaft has a loose coupling to facilitate withdrawal outboard for examination. The turbine shaft is 20½ in. diameter, increased at the tail end to 22½ in. with a 10 in. hole through the center throughout.

The plummer blocks for the turbine shaft, of which there are eleven, are provided with forced lubrication at a pressure of about 20 lbs. per square inch. The oil gravities to the bearings from a tank placed high up on the casing and of sufficient capacity

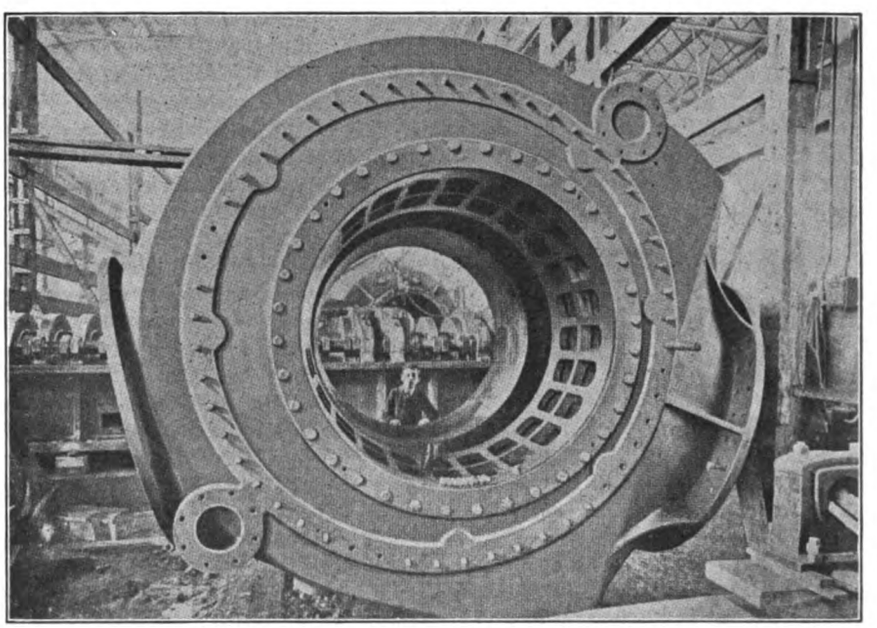


FIG. 17—CASING OF ONE OF THE CHANGE-OVER VALVES.

Generated on 2024-08-28 11:16 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

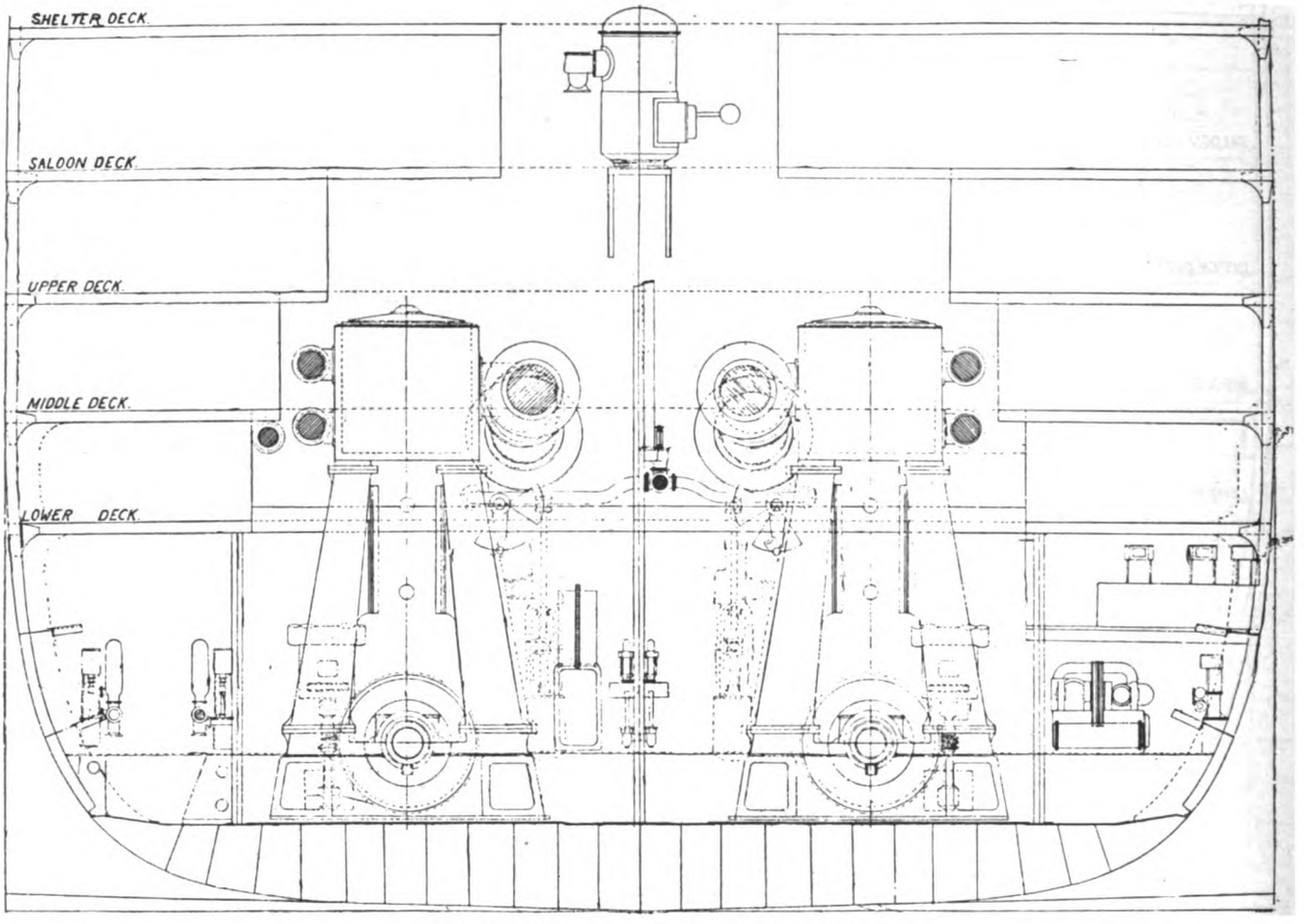


FIG. 18—SECTION THROUGH RECIPROCATING ENGINE ROOM

to hold a ten minutes' supply. The oil escaping from the bearings is collected in two drain tanks placed beneath the engine room floor, from whence it is pumped back through filters and coolers to the supply tank. All the plummer blocks are also provided with a water cooling surface.

The wing propellers of the Olympic are three-bladed and have a diameter of 23 ft. 6 in. The bosses are of cast steel and the blades of bronze. The center or turbine propeller has four blades and is built of solid manganese bronze. Its diameter is 16 ft. 6 in.

The condensing plant has been designed to allow a vacuum of 28½ in. with the barometer at 30 in. and a temperature of circulating water to from 50 to 60 degrees Fahr. As already stated, there are two main condensers placed in the turbine engine room. They follow in design Harland & Wolff's standard practice and are pear shape in outline, as will be seen from Fig. 16, the object of the pear shape being to concentrate the tube surface where the largest volume of steam is admitted. The inlet extends the full length of the condenser, as is usual with turbine installation and is well stayed vertically with division plates which are in line with corresponding division plates in the condenser body so that an equal distribution of steam over the tube area may be secured.

The auxiliary condenser, which is placed on the starboard side of the reciprocating engine room, is of similar design to the main condenser and has a cooling surface of 3,600 sq. ft.

The engine telegraphs for transmitting orders from the captain's bridge to the starting platform are of the usual type fitted in large vessels and call for no special comment. A system of illuminated telegraphs has been provided between the starting platform and the various boiler rooms to enable the engineer on watch to communicate his orders to each stokehold. With eleven stokeholds to control, the foremost of which is 320 ft. from the engine room, the necessity for such an arrangement is evident. The whistles of the Olympic are the largest ever made. Each set consists of three bell domes each 9 in., 15 in. and 12 in. diameter and about 4 ft. 2 in. high. One set is fitted on each of the two foremost funnels. The whistles are electrically operated, the officer on the bridge having merely to close the switch to give a blast, and there is also an electric time control arrangement whereby the whistles are automatically blown every eight to ten seconds during thick weather.

The passenger accommodations of the Olympic are unrivaled. About 2,440 passengers can be accommodated, so that with a crew of 860 she carries a grand total of 3,300 persons. The accommodation for first class passengers is placed amidships and extends over five decks. Access from one deck to another is obtained by means of two grand staircases, several smaller staircases and by three electric elevators. The first class public rooms include the dining room, reception room, restaurant, lounge, reading and writing room, smoking room and the veranda cafes and palm courts. Other novel features are the gymnasium, squash racket courts, turkish and electric baths and the swimming pool. Owing to the great size of the boat the staterooms are of unusual size and range from suites to single rooms with single berths. Naturally to supply so huge a family the culinary department must be of

Generated on 2024-08-28 11:16 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

a most unusual character. The kitchens extend the whole width of the ship for a length of nearly 160 ft. In the kitchen there are two huge ranges, having a frontage of 96 ft. and containing nineteen ovens, probably the largest ranges ever made. There are also four circular grills, two large roasters, ranges of steam ovens, steam stock pots, hot closets and electrically driven slicing, potato peeling, mincing, whisking and freezing machines. The bakery is placed just aft of the kitchen on the port side and contains electrically driven dough-making and other machines besides water-tube ovens for turning out the very highest class of Vienna table bread. A separate kitchen with its own pantry and scullery is provided for the restaurant.

The service of plate, which comprises over 10,000 pieces, has many novelties. One of the largest pieces of the service is a massive duck press, which forms a most imposing adjunct. There is also a neat portable spirit lamp with a quick heating flame for keeping warm special sauces and for making Turkish coffee. Further novelties are the fruit tymbal and caviare dishes by which the contents are kept cool by an ice bath when taken from the cold storage and placed before the passenger.

As stated in the opening paragraph, the Olympic is the last word in comfort and elegance aboard ship. For the data and illustrations from which this article is compiled we are indebted to the *Shipbuilder*, Newcastle-on-Tyne, which has issued a souvenir number devoted exclusively to the Olympic and describing the vessel completely to the least of her auxiliaries. Naval architects wanting a complete description of the great vessel are advised to write for this issue of the *Shipbuilder*.

THE STRIKING FEATURES OF DEVELOPMENT IN MODERN LINERS

By Professor W. S. Abell, Professor of Naval Architecture, University of Liverpool.

THE increase in size of all types of ships, and particularly those which ply on the Atlantic ferry, has been in no way more marked than in the improvements it has been found possible to make in the equipment. No doubt the tendencies at work in many directions would have resulted in improvement, but on the other hand, without the greater dimensions, it would not have been possible, as is the case today, to successfully bring the large passenger ships in the category of a floating hotel or even mansion.

As the length and the displacement of the ship is enlarged, so the depth of the structure requires to be increased for economy of material. The first effect of this increase is to add to the headroom between the decks; the floor space has already grown with the necessary alterations in beam and length.

Freeboard and height of decks above water has consequently grown, and the bulk of the passenger accommodation can therefore be placed well above water. The main saloons, with the exception of those used for dining purposes, are generally placed on the uppermost or boat decks, and so far above water that they are practically never battened down. From these spaces access is directly obtained to a promenade which can be used in nearly all weathers, and whose extent is quite in keeping with the dimensions of the large ship.

There are therefore many possibilities as regards height of living rooms, ventilation and freedom of access to fresh air, which facilities are brought about simply by larger size.

This is not, however, the only point in which improvement can be chronicled, because the disturbance brought about by waves on a floating body depends largely on the relative size of waves and ship. If, as is now the case, the ship is large compared to the wave systems it commonly meets, then greater steadiness must result, the movement of the ship being generally small and the motion easy; so that the fittings which have developed on land may be more easily applied to marine work.

In this connection it may be observed that in general anything in common use on land cannot be directly applied on board ship; but when the ship has been brought to a fairly steady structure the adaptation becomes more simple, and therefore more rapid.

Again, the development of marine engineering has resulted in the saving of space and weight of machinery, and, in addition, increase in size of ship involves less power per ton of displacement for the same speed. Consequently on two grounds a greater relative amount of space and weight are available for passengers in the large ships, and thus the general character of the accommodation can be improved.

The large ship, however, involves larger internal distances and greater difficulties of communication between the various points; provision has therefore to be made in many ways to overcome such objections. The accommodation may be arranged on four decks, corresponding nearly to a four-storied house; it is certainly necessary therefore to provide passenger, luggage, and serving lifts, if comfort is to be well provided for. The distances between cabins and living rooms, between bridge and engine room, are very great, and consequently an efficient telephone service becomes a necessity.

Question of Bulkheads.

The safety of these large vessels is also improved because damage results in relatively less danger. It is probable that, provided the main divisional bulkheads remain intact, a large vessel could not be sunk by any ordinary peril of the sea. It is, however, necessary to have openings for communication in many bulkheads, which it is essential should be easily closed in emergency.

Formerly this was done by hand, but distance, difficulties of communication, and inavailability of men close at hand would not allow the human element to be sufficiently reliable. As a consequence systems have been developed and applied for rapidly closing at will all important watertight doors in the ship. For this purpose either electric or hydraulic power is used, and with such means of transmission it becomes easy to place the controlling apparatus in one station near to the bridge, which is the proper place in an emergency.

It is possible that fires may break out in places which are out of sight, such as holds, and the prospects of a fire in the staterooms or saloons cannot be lightly regarded. The fire arrangements

Generated on 2024-08-28 11:14 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

have therefore to meet the requirements caused by the great distances, and the ships are fitted with break-glass alarms, and also automatic fire alarms, recording in both chart house and engine room. The various spaces must also be provided with hydrants and hoses, and duplicate fire mains run throughout the ship.

The Abolition of Vibration.

There is one ill effect, however, which the naval architect, in spite of the advance of science, has not yet been able to entirely obliterate, i. e., vibration. In the case of reciprocating engines a great deal of attention has been paid to design in order to ensure that the running shall be as free from disturbing forces as possible; in other words, the engines are "balanced," or nearly so.

It was thought that with the introduction of turbine machinery, which is more or less naturally balanced, that vibration would be considerably less. Unfortunately, it is necessary to run turbines faster than reciprocators, the power in the turbine ship has generally to be distributed over a greater number of propellers, which occupy more space at the stern, and which also do not perform as well, mainly owing to the crowded position. Consequently, vibrations were again made manifest, and experiments showed that these were directly traceable to the propellers. Recent work has shown that the vibration can be minimized, but certainly not obliterated. It is to be pointed out, however, that vibration, although it may exist to only a slight degree, actually appears to be very much worse than it really is, the reason being that the effect of the disturbing forces is to cause doors, windows, and any movable or suspended fittings to rattle, and to make considerable noise, even when the vibration movements are hardly perceptible to a passenger. Consequently by paying greater attention to details of fittings, i. e., by supplying spring fastenings, hinges or catches, or by other similar devices it is possible to considerably minimize the apparent vibration, and in this direction much has been done which is of great value.

The effect of size is most strikingly shown in the main saloons. The increased height and the general extent of the spaces have lent themselves, or have been cleverly adapted to, the greater capacity for decorative effect. The main dining saloon is generally a most striking feature, and in order to obtain height, and for convenience in serving, is generally placed on the upper deck. This saloon, as is often the case with cafes, is arranged in two tiers, the upper part being arranged around a well looking down to the main floor. The whole is surmounted by a dome extending to another deck, which completes the scheme, and which adds enormously to the architectural effect. The extent of the lower part may be as much as 90 ft. square, with a height of perhaps 10 or 11 ft., the distance from floor to top of dome being as much as 30 ft. Architects have also taken advantage of necessary structural features of the ship to divide the saloon into a number of alcoves, so that the impression of being on board ship is almost obliterated. Needless to say, the provision and extent of such a place renders it necessary, and it is, of course, possible to adopt all the modern land conveniences of hotel life.

The other saloons, such as the library, smoking room, lounge, and music room, are situated on the boat or topmost deck, surrounded by an excellent promenade, 60 to 70 ft. above water. The spaces are ample and lofty, since here there is little restriction as regards head room. Advantage is generally taken of this to arch the roof, or fit a domed skylight, and the adoption of bow windows in some of the rooms is a feature, which might have appeared many years ago, and certainly adds to the homelike appearance. The general adoption of square ports and sidelights, with their numerous devices and possibilities, is quite away from previous tradition.

The improvement is not altogether confined to saloons; it is evident in the size, fittings and appointments of the ordinary staterooms. Suites of rooms, composing either a complete flat or a pair of rooms en suite, are a distinct feature. The entrance hall and main stairways, with lifts and surrounding offices, are quite on the same magnificent scale.

With such spaces at his disposal, the architect, designer and furnisher have risen to the occasion, and supplied decorations and appointments which rival the best hotels, and which compare to advantage with the best styles of decorative work on land. It is, however, a matter of regret that the decorations are so much in accordance with land practice, and do not express, as they should do, the characteristics of the ship. There is no doubt that the transformation of these floating steel structures into the appearance and comfort of a great hotel is a marvel of the age. Whole countries have been searched for the beautiful woods that line the saloons, and new processes or adaptations of the furnisher's art have been called into play. There is nothing in the way of imitation; all is good solid work—an example of what this country can do.

Floating Towns.

The arrangements for catering, the kitchens and pantries, are provided with the best of equipment, and on the largest scale. Ranges, ovens, bakeries, and necessary machinery to provide meals for 3,000 persons a day, require no mean provision of equipment. Pantries, bars, and the open air cafe have all to be arranged. Care has also to be taken that none of the smells, inseparable from cooking, penetrate into the living compartments; yet, at the same time, easy access is required for serving purposes. This is not such a difficult matter on land where admission of fresh air is always possible, but in an enclosed place, such as the interior of a ship, a problem not always simple on land, becomes difficult. In fact, another surprising development in the large ship has been a comparative total absence of what may be termed a "shippy" smell. It is also at once noticeable that the air within the ship is pleasant, and very equable in temperature. It is generally admitted that problems of heating and ventilation in large buildings are not by any means well understood; yet the most difficult case of the ship seems to have been in recent practice successfully treated. Great attention has been paid to the supply of fresh air by special systems, which draw from the boat deck and from places on the promenade where the air is pure. The air thus has a good amount of moisture, and is carried over heaters, which raise it to a comfortable temperature. Means are also provided to add moisture to the air if the heat added has to be considerable, as might happen in very cold weather. It is not surprising that the provision of so much has created a demand for more; consequently nearly all the luxuries which go to make up the equipment of a modern hotel find their counterpart in the large ship. Cold chambers and stores are provided, and that on no small scale. The sanitation and conveniences are equal, if not superior, to anything ashore, and the provision of a barber's shop, with every possible facility, adds a finishing touch to the equipment. A nursery and a swimming bath are practicabilities, and rumors are numerous of a squash racket court and a skating rink—the latter should be an interesting feature if it ever arrives.

At any rate, it seems that the possibilities of the floating caravanserais of the future are boundless, and that it is no far cry to a floating Hotel Metropole, which will spend a few weeks during the season at a number of seaside resorts, thus enabling its visitors to sample the delights of many places. Such an hotel does not require much driving power,

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

since it need only steam quite slowly, and, if big enough, would probably have sufficient steadiness to boast a billiard saloon.

In many small ways the conveniences of life on board ship have been much ameliorated. The provision of wireless telegraphy on most of the Atlantic ships, and the increased developments in that direction, have enabled the passengers to keep in touch with everyday life throughout the journey to America, as well as allowing them to communicate with the shore for business and personal purposes. Moreover, the provision of a printing office, and the production of a daily paper of its own, raises the floating island to the dignity of a municipality. Commercial offices, where typewriting can be done, enables business to be transacted afloat just as well as on shore, and the traveler of the present cannot hope to escape from the worldly toils on the modern ocean journey.

Romance of Ship Building.

Romance at sea is supposed to be dead, but the tale of such a floating island, which can be moved, at the direction of a man, in spite of all the dangers of fog, wind, and sea, is at least as wonderful as a story from the "Arabian Nights," particularly if it is recognized how many people have been engaged in producing this marvellous result. It is also a source of much gratification, in that it is not an empty boast, that the finest of these productions carry the flag of this country, which now leads, as it must do as long as it exists, the van in the development of naval architecture.

It is difficult to conceive what is going to be the ultimate limit of size of these monsters of the deep. There seems as yet no indication as to where the competition for the biggest ship will end; but there is one important point which will be a great deciding factor in the matter.

If economy is to be relatively maintained, the draught of water must go up as the dimensions increase. If the amount of difficulty experienced in providing an entry channel for vessels drawing 35 ft. of water into the principal ports of the world, and also the enormous annual expenditure involved in proper upkeep be taken into account, it may well happen that from harbor considerations alone it may not be economically possible to build a ship drawing more than 40 ft. of water. General considerations of safety will, of course, limit the height of the above-water structure, that is, the amount of accommodation possible, and any increase of length beyond a minimum determined by those requirements will be uneconomical, and will therefore not persist.

What this minimum length may be has not yet been even approximately determined, but whether it be 1,000 or 1,200 feet, it is not at all likely that the structure cannot be economically provided. Floating steel structures can be built of these dimensions, and limitation will, in the commercial ship, just as in the warship, be brought about by financial considerations alone. The passenger ship of the more immediate future is likely to differ considerably from that of the present, but the difference will be mainly as regards external appearance. The advent of the internal combustion marine engine will, in the full course of development, result in obtaining for the same weight about two and a half times more power than existing machinery. As a consequence it is probable, as liquid fuels, whether obtained naturally or by artificial means, come into common use, that ships may be provided with twice the amount of power they now possess. The increase in speed, taking into account the great length, may, perhaps, result in the Atlantic greyhound making some 30 knots an hour.

In these ships no funnels will be necessary, but masts will probably remain to a later date, for purposes of wireless communication, unless by that time, as is not at all unlikely, the control of wireless energy is such that height above sea level is not such a great factor in the distance of transmission. In these huge ships with high superstructures, the wind resistance, especially of projecting portions, such as deck houses, rigging and funnels must be of great importance, especially when progressing against a heavy wind. One of the problems of the future, which needs considerable research and experiment, is this very question of air resistance of ships. The result will probably be that the above-water portions of the ship will be formed in such a way that the windage effect is considerably less, say, by making the shape smooth and somewhat cigar-shaped, but certainly by enclosing as far as possible any deck erections.

It is probable that large cargo carriers and battleships will, on the contrary, revert to something approaching the whaleback, or possibly the submarine. The passenger vessel is never likely to reach this stage, because one of the indispensables of this class of vessel is that the load is carried mainly above water, since the accommodation must necessarily be always open to light and air. The effect of such developments on the equipment and general arrangements of the large ships are likely to be such that in the future it will be still more possible than at the present to reproduce successfully afloat all the best features of shore life, and the transformation of the ship into a movable dirigible municipality will be more real then than it is today, when the illusion is by no means imperfect.

New Propeller for High-Speed Vessels

As the result of investigation as to the cause and cure of cavitation, Naval Constructor W. D. Taylor, of the United States navy, has invented a propeller for which he claims that it will obviate the fitting of screws of excessive areas, and accordingly of low efficiencies, which are adopted at present—of necessity—in high-speed craft of great power. From experiments with propellers of various areas in the torpedo boat destroyer Daring, Mr. Barnaby, of Messrs. Thornycroft, arrived at the conclusion that if the thrust per square inch of a screw was above 11.25 lb. for 1 ft. immersion with ⅜ lb. additional for every added foot of immersion, the water was unable to follow up the screw blades, and that cavities in the water forward of the screw were formed. These cavities were probably filled with air and water vapor. Mr. Taylor asserts, however, that the thrust limits given by Mr. Barnaby do not furnish a satisfactory basis as to the presence or otherwise of cavitation. In his experience propellers have given much greater thrust than Mr. Barnaby's formula suggested, whereas cavitation has been produced when the thrust was only 5 lb. per square inch in one case and 7½ lb. in another.

From these ascertained facts, Mr. Taylor was forced to discard the hitherto accepted theories and to conclude that the prime factors involved in the phenomena were, first, the speed of the blade through the water, which is conveniently measured by the tip speed; and, second, the shape of the blade section, and also that thrust limit has nothing to do with the cavitating point. In the Washington experimental tank a propeller specially designed to cause cavitation was tried. Its diameter was 14 in. and its pitch 4.2 in. By means of apparatus for measuring pressure on the face of the blade and suction behind, Mr. Taylor discovered that cavities at the back of a blade had no injurious effect on a propeller's performance, but that when these were formed on the driving face a drop in efficiency and thrust were evident.

During the experiment the propeller was illuminated by a searchlight, and it

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

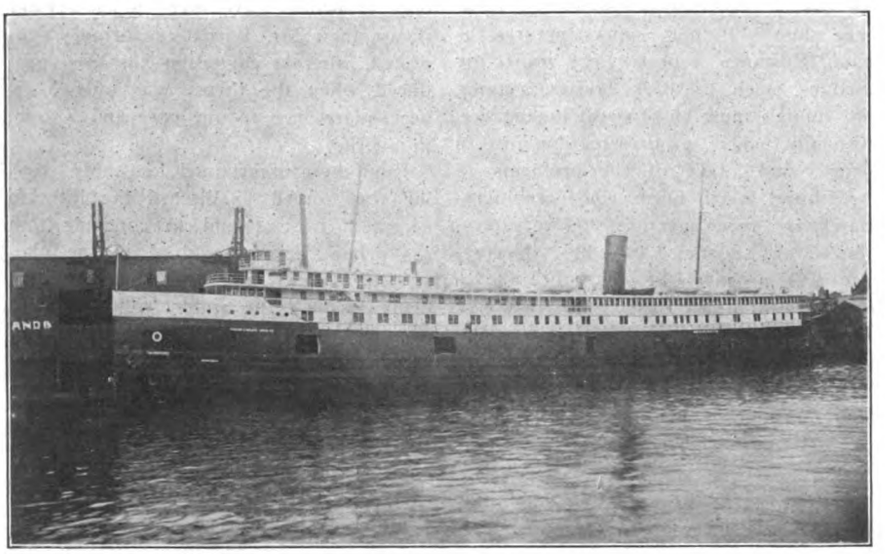
was possible to observe the presence of the cavities, their position, and their development. With increase in tip speed the cavities on the driving face grow rapidly, and these, combined with the negative thrust of the leading portion of the blade back, stop the increase in thrust, and then actually cause it to decrease to zero and below. When a propeller is revolving at a high rate the water cascades from the leading edge over the face of the blade. The wider the blade the greater the area of the face, the thrust of which is not nullified by cavitation. With a narrow blade the cascade might extend over the complete face and the propeller give no thrust.

This theory explains well the necessity for the great widths adopted in destroyers and fast turbine vessels where the tip velocities are very high. The new propeller is designed, however, to minimize the extent of the cascading, and so make possible the adoption of propellers of less area and accordingly of higher efficiency than are at present possible with these classes of vessels. Mr. Taylor discovered that by serrating the leading edge of the propeller with ribs extending from the middle of the blade at the back to the point of each tooth the face cavities confined themselves to narrow rings around the leading edge.

The commercial value of such a discovery is very great. In destroyers the added efficiency of the propeller due to less area would probably make a difference of a knot in speed, or a saving in power of 10 per cent. In merchant work the difference in the coal bill would be considerable were an added propeller efficiency of that amount given. Apart from the commercial value of the new propeller, the discovery of the theory which suggests its usefulness adds another to the many subjects that Mr. Taylor has illumined by experiment and experience.

The New Steamship Minnesota

ON June 16 the Chicago & Duluth Transportation Co. placed a fine new steamer on the route between Chicago and Duluth. She is the Minnesota converted into a passenger steamer from the old freighter Harlem. The Harlem, a steel ship, was built in 1888 for the Western Transit Co. and her principal dimensions are: Length over all, 306 ft.; beam, 41 ft.; depth, 18 ft., and mean load draught, 10 ft.



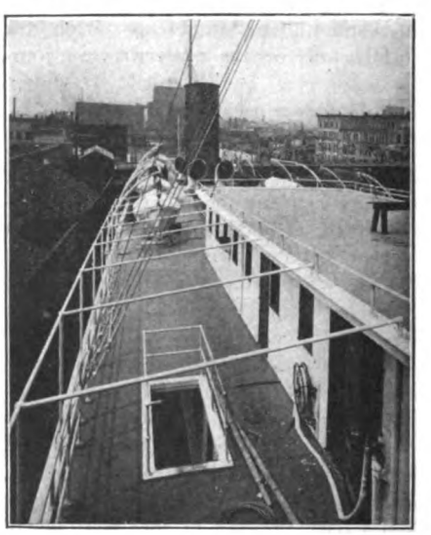
THE MINNESOTA REBUILT.

The Harlem was purchased from a gentleman in Milwaukee and brought to Manitowoc Feb. 19, 1911, and dismantled. The old deck houses, funnels, spars and boilers were taken out of her so that of the original ship only the hull, with the spar and main decks, and the engine remain. Everything else on the completed ship is new.

The Manitowoc Ship Building & Dry Dock Co., Manitowoc, Wis., made the alterations, the cabin work being done by the Manitowoc Building Supply Co. The entire work was completed on June 16, the time consumed being a little over three and one half months.

There are six decks, orlop, main, spar, promenade, boat and hurricane decks. Of these decks the main and spar are of steel, the latter being covered with wood. The spar deck terminates forward in a steel forecastle which extends to the promenade deck.

There are large ports, four on each side of the ship, which open onto the main deck. The after port, used as the entrance for passengers, opens into the lobby. This is finished in curly birch as is also the main stairway which gives access to the main cabin above on the spar deck. The paneled sides of the main cabin are finished in old ivory. All staterooms



BOAT DECK OF THE MINNESOTA, TAKEN FROM THE BRIDGE.

have large outside windows and are finished in a design to correspond with the main cabin.

These rooms have all modern conveniences such as running water, electric lights and bells, etc. Brass berths are fitted in all the rooms instead of the customary wooden ones. In the main cabin are also well lighted and ventilated toilets. Two stairways finished in curly birch give access to the promenade deck cabin.

The paneled sides of this cabin are finished in curly birch as is also the ladies' parlor, which is situated forward. In the after end is the large dining room, which is equipped with observation windows. The woodwork is dark mahogany, also the chairs and tables. A handsome sideboard is built in at the after end. The old style long tables are done away with and round tables substituted, which seat from four to six persons. In

Generated on 2024-08-28 11:20 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

all 136 can be seated at one time. The dining room extends the full width of the ship. A large skylight provides additional light and air. Just aft of the dining room is the pantry, which is connected to the galley on the orlop by two dumb waiters.

The promenade space for the passengers is restricted to the promenade deck and the forward end of the boat deck. The boat deck can be reached from the promenade by two stairways located outside.

At the forward end of the boat deck is a deck house, which contains the captain's and officers' rooms and also the smoking room, which is finished in curly birch. The smoking room is entered from the outside, doors being provided at the after end for this purpose. On the top of this boat deck house is the pilot house. A powerful searchlight is mounted on the roof.

The ship is fitted with two steel pole masts. The main mast is used as a stack for the kitchen stove. Between the masts is rigged the wireless. The fore mast is just aft of the pilot house.

On the boat deck are eight life boats and three rafts. Seven of the boats are of steel 20 ft. long and the eighth is a wooden working boat. These boats rest in the Gunnel patent boat saddles and are handled by the usual type of davits. On the boat deck is also a coaling hatch.

The propelling machinery consists of one triple-expansion engine with cylinders 23¼ in. high pressure, 36¼ in. intermediate, and 62 in. low pressure with a stroke of 48 in. The new propeller is of the built up type with four blades. The engine room has a skylight and two ventilators.

Steam is generated in four new Scotch boilers, built by the Manitowoc Boiler Works. They are 12 ft. x 12 ft. with two furnaces in each. They are arranged two on each side with a fore and aft firing room. The boilers are provided with a common uptake. The boiler room is ventilated by four 36-in. ventilators.

The ship has a new steam steering gear of Williamson Bros. make, with 6 x 7 cylinders and also an independent hand steering gear. The anchors are of the stockless type stowed in the hawse pipes and handled by a windlass of the American Ship Windlass Co.'s make.

LAUNCHING THE BULK FREIGHTER COL. J. M. SCHOONMAKER

THE bulk freighter Col. J. M. Schoonmaker was launched from the Ecorse yard of the Great Lakes Engineering Works for the Shenango Steamship Co. of Pittsburg, of which W.. P. Snyder is president, and was christened by Miss Gretchen V. Schoonmaker, daughter of the vice-president of the Pittsburg & Lake Erie Railroad, in whose honor the vessel is named. The Schoonmaker is the largest bulk freighter on the great lakes and is also said to be the largest vessel designed exclusively for bulk freight carrying in the world. The new steamer is 617 ft. over all, 597 ft. keel, 64 ft. beam and 33 ft. deep. It is expected that she will carry 14,000 gross tons of ore on the Lake Erie run and 15,000 gross tons in the run between Escanaba and South Chicago, where deeper draught may be obtained.

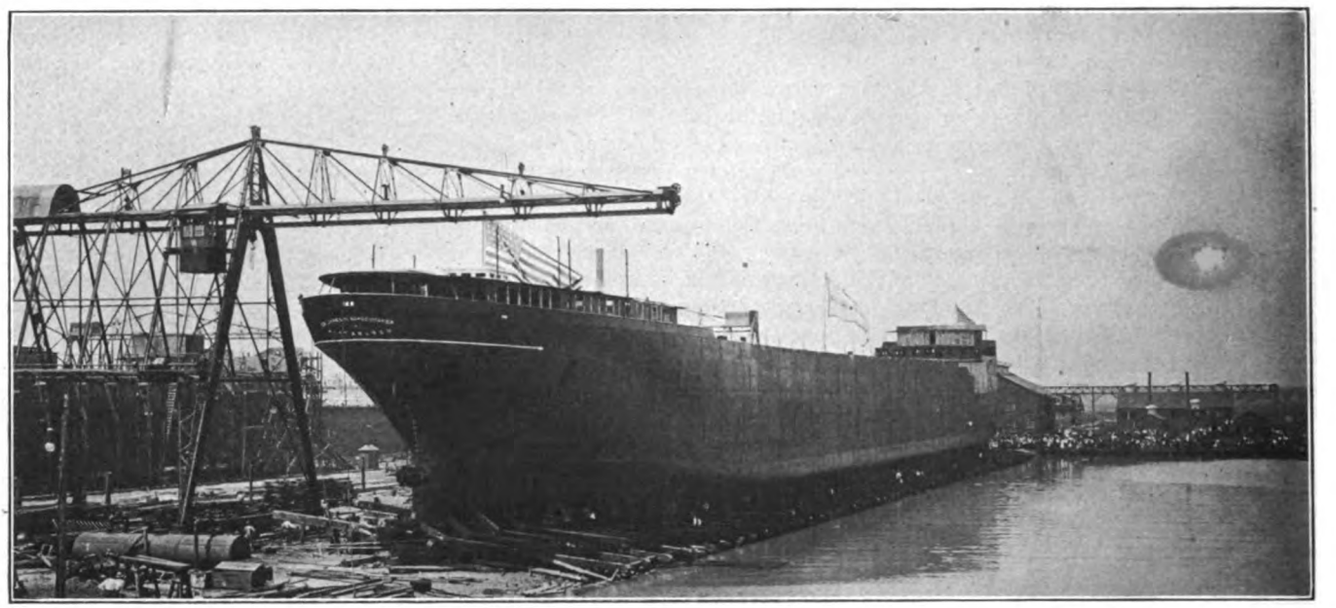
The launching was successful in every way, the great vessel leaving the ways quite evenly, but successful launches are so common on the lakes that one becomes forgetful of the great hazard involved. The launching party were taken to the shipyard on the steamer Pleasure and enjoyed a delightful sail, as the day was ideal.

Since William P. Snyder entered lake trade he has built a number of unusual craft, but the Schoonmaker presents the most radical departure of them all. It developed at the

THE SCHOONMAKER LAUNCHING PARTY.

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

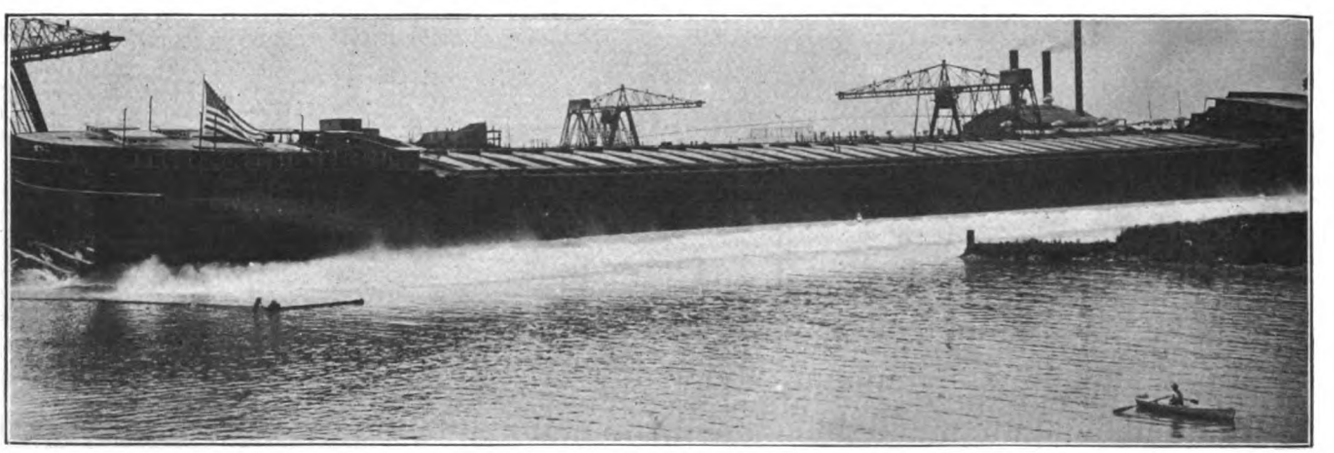
luncheon following the launch that Col. Schoonmaker himself was partly responsible for the unusual dimensions of the vessel. It might be said in passing that Col. Schoonmaker was the youngest colonel in the civil war, having just passed his twentieth birthday when he was made a colonel, overleaping entirely the rank of lieutenant colonel. His military career was of the most brilliant character and owing to his dash and absolute fearlessness he was put in charge of many of the most hazardous undertakings. Col. Schoonmaker began his commercial life in connection with the river service of the New York Central Lines or what he called "thin water" navigation. It was while making a trip on the Shenango two years ago and watching the maneuvering of one of the big bulk freighters at the Sault that he remarked to Mr. Snyder as a reflection of his own experience that the great freighters would be more responsive and manageable if they had greater beam. Some time later Mr. Snyder met Mr. Schoonmaker in Pittsburg and told him that he had given much thought to his remark at the Sault and had decided to build a steamer of four feet greater beam than any on the lakes and name her after him. The radical thing about the new steamer is that there is at present only one lock at the Sault through which she can pass and that she will not be able to avail herself of her full earning capacity until the third lock now in process of construction is completed.



BULK FREIGHTER COL. J. M. SCHOONMAKER ON THE WAYS.

The luncheon at the Pontchartrain was quite a sparkling affair. President Antonio C. Pessano of the Great Lakes Engineering Works asked William Livingstone, president of the Lake Carriers' Association, to preside, and of course in lake affairs there is no better presiding officer than Mr. Livingstone, since his information on lake affairs is varied and exhaustive and pours from him as water from a fountain. He made many telling points in his brief address, declaring that no navigable stream in the world equaled that of the Detroit river, which bore a commerce equal to that of the combined commerce of London, Liverpool, New York and Hamburg with plenty to spare.

The principal talk was made by Col. Schoonmaker, who proved himself to be an easy, fluent and convincing speaker. He said that the design of the Schoonmaker had already been criticised as unwarranted in construction according to present facilities and conditions of trade, but he added that in all affairs of life there must be a pioneer and that the



LAUNCHING THE BULK FREIGHTER COL. J. M. SCHOONMAKER AT THE ECORSE YARD OF THE GREAT LAKES ENGINEERING WORKS

Generated on 2024-08-28 11:22 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

trial blazed by Mr. Snyder would eventually be followed by others. He took occasion also to pay a tribute to Gen. Russel A. Alger, under whom he served during part of his military career. There are many who share Col. Schoonmaker's opinions regarding Gen. Alger, whose administration of the war department during the Spanish-American war to those who really had the opportunity to actually observe it, was splendid, and history will eventually do him justice on this score. Col. Schoonmaker declared in discussing his military career that he was not a peer, but better than a peer.

Brief addresses were made by Joseph Ripley, who was for thirty years stationed at the locks at the Sault, and by Dr. William Lincoln of Cleveland. Among those present at the launching were Mr. and Mrs. Wm. P. Snyder, Col. and Mrs. J. M. Schoonmaker and Miss Gretchen V. Schoonmaker, John A. Donaldson, Miss Mary Black Snyder, Miss Lucy Kaye and Miss Bessie Woods of Pittsburg; Dr. Wm. Lincoln and Alexander Hynd of Cleveland; Wm. Livingstone, Henry W. Hoyt, John R. Russel, George H. Russel, Henry Russel, A. C. Pessano, Col. F. J. Hecker and Joseph Ripley.

The propelling machinery of the Schoonmaker consists of a triple-expansion engine, 23, 33¼, 48 and 69 in. cylinder diameters by 42-in. stroke, supplied with steam from three Scotch boilers 14 ft. 9 in. by 12 ft. 2 in., allowed 220 pounds pressure, equipped with three 44 in. Morison furnaces to each boiler. She has two Hyde steering engines with Akers transmission, a Hyde steam windlass aft to handle the kedge anchor and Hyde windlass forward. She has six Hyde mooring machines. Her electrical equipment consists of two 15 k. w. and one 10 k. w. Crocker-Wheeler generators, which are driven by American blower engines. There are two reciprocating pumps, 12 in., 14 in., 18 in., manufactured by the Warren Pump Co. and two centrifugal pumps 18 in. diameter driven by two 12 x 10 double engines built by the Kingsford Foundry & Machine Co., Oswego, N. Y. A feed pump 14 x 8 x 18, fire pump 12 x 6 x 14 and two duplex pumps 6 x 4 x 6 for sanitary purposes are of Warren make. Her refrigerating plant consists of one 2½-ton ice machine and one 3½-ton ice machine built by the Phoenix Ice Machine Co., of Cleveland.

Mr. Snyder in the installation of passenger quarters has cared for his guests in a style of magnificence unrivaled in lake practice. The Schoonmaker will have accommodations for twelve passengers in the deck house forward, there being six staterooms each with private bath in addition to the owner's room and maid's room. There will be an observation room on the forecastle deck and a smoking room in the texas. Superimposed upon the smoking room will be the enclosed pilot-house. There will be a grill room forward on the spar deck fitted with tile fire-place and electric heater and finished in light green. The galley on the main deck below will be operated entirely by electricity. The private dining room will be aft as usual. Every room on the boat including the crew's quarters will have an electric fan.

An interesting spectator at the launching was Capt. Sealby, who was master of the Atlantic liner Republic, which was sunk in collision with the steamer Florida. The groping of the Baltic through the thick fog to answer the wireless calls of distress from the Republic afford one of the most thrilling chapters in the history of ocean rescues. Capt. Sealby is now studying law at Ann Arbor.

The Development of the Modern Power Boat

By Robert E. Power,
Editor Power Boating.

The development of the modern gasoline-propelled power boat during the past year has been epochal in character as well as results. While it was like the automobile more than 12 months ago, a definite and certain quantity in the industrial world and occupied a prominent place in pleasure and commercial pursuits by people in all parts of the world, there has been most marked advancement in refinement of details and general extension of its scope of usefulness.

In most all instances the experimental stage, as far as it affects the consumer, has been passed. He may, on an investment as low as $150, buy a power boat which will give unquestioned satisfaction and service up to the limit of its possibilities. This condition is, of course, largely due to the perfection of the power plant. It has never been difficult to design or build satisfactory hulls because the intrinsic ideas of naval architecture have been practiced for centuries. Generations of scientific men have diagnosed the action of the elements on floating bodies of all forms until no radical variation from accepted principle remains for further experiment.

The exception which proves the rule in this case and which is almost exclusively, we might say, a 1911 product, is the hydroplane. It was first developed in France, where the possibilities of great power to be derived from light weight, high speed gasoline engines became apparent to marine engineers. Instead of driving a hull of given form and displacement through the water at high speed, it was discovered that the form of the hull could be so arranged as to make the retarding force forward a lifting factor, thereby causing the bow of the boat to raise out of water and sweep over instead of through it. This meant reduced wetted area and less resistance, therefore an appreciable gain in speed.

Last spring at Monaco Brasier Despujols, a French hydroplane with four-cylinder motor of 160 horsepower, easily established a world's record for motor-driven craft, covering a measured statute mile, 5,280 feet, in 1:18½, which is at the rate of 46.06 miles an hour. It is conceded that for high speed in smooth water the hydroplane has come to stay and its possibilities are only just begun.

The development in marine power plants has been as stated above, directed toward refinement of details, meaning by that ease and economy of operation and extreme reliability. Particular attention has been paid to ignition devices and lubrication. A hot spark, perfectly timed, is now an absolute certainty. Unlike other modes of travel the man who goes to sea must have absolute power to rely upon or his life and those of his passengers are endangered. Consequently, slow-turning, heavy-duty engines are mostly employed for off shore work. We have examples of reliability, where small power boats went to Bermuda and back, 1,500 miles across the open ocean, without disablement of any sort. Only the storage of sufficient fuel prevents the passage to Europe and that event is already in sight.

As a commercial proposition, the power boat is rapidly displacing steam within certain limits of cargo capacity and radius of operation. It is proving more economical because of the lessening of labor in operation and the fuel cost is being cut down by the growing use of kerosene and heavier oils, which are being successfully converted in combustible gas. The development along the lines of economy and reliability while less talked about than the smashing of high speed records is nevertheless very keen and is undoubtedly the largest single factor in the present popularity of the modern power boat.

The Spanish-American Iron Co., Nipe Bay, Cuba, has given contract to the Maryland Steel Co., Sparrow's Pt., Md., for a freight and passenger steamer to be 125 ft. long, 25 ft. beam and 15 ft. deep.

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE MARINE REVIEW

DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

Published monthly by

Penton Publishing Co.

PENTON BUILDING

CLEVELAND.

CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....808 Provident Bank Bldg.
NEW YORK....Room 1115 West Street Bldg.
PITTSBURG.....2148-49 Oliver Bldg.

Correspondence on Marine Engineering, Ship Building and Shipping Subjects Solicited.

Subscription, U. S. and Mexico, $1.00 per annum. Canada, $1.50. Foreign, $2.00.
Single copies, U. S. and Mexico, 10 cents. Elsewhere, 15 cents. Back numbers over three months, 25 cents.

Change of advertising copy must reach this office on or before the first of each month.

The Cleveland News Co. will supply the trade with THE MARINE REVIEW through the regular channels of the American News Co.

European Agents, The International News Company, Breams Building, Chancery Lane, London, E. C., England.

Entered at the Post Office at Cleveland, Ohio, as Second Class Matter.

(Copyright 1911, by Penton Publishing Co.)

July, 1911

THE MARINE REVIEW can be found on sale at the following news stands:

E. J. O'Connor, 2 Ohio st., Buffalo.
R. J. Seidenberg, Ellicott Sq., Buffalo.
J. H. Fleming, Chamber of Com., Buffalo.
Postoffice News Co., 178 Dearborn st., Chicago.
Frank Morris, 165 Wabash av., Chicago.
James Dunne, C. N. W. depot, Chicago.
Wayne Hotel, Jefferson and Third st., Detroit.
Robert Schram, 115 Woodward av., Detroit.
Geo. W. Sharpe & Co., 138 Griswold, Detroit.
Frank Kleinschmidt, 652 Broadway, Gary, Ind.
K. Kramer, Produce Exchange bldg., Toledo.
Board of Trade News Stand, Boston, Mass.
Revere Beach and Lynn News Stand, 350 Atlantic av., Boston, Mass.
Rowe's Wharf News Stand, Atlantic av., Boston.
Staub's News Emporium, Exchange alley and Canal st., New Orleans, La.
Hollei's News Stand, Commercial place, New Orleans.
Hill's News Stand, Charles, near Canal st., New Orleans.
J. Fine, Produce Exchange bldg., New York.
Wm. Farrell, Battery pl. and Greenwich st., New York.
J. Fuchs, 17 Battery pl., New York.
Navy Yard News Stand, 1116 Eighth St., Washington, D. C.
New Willard Hotel, Washington.
W. B. Holtzclaw, 1705 Pa. av., Washington, D. C.
McPartland & Reich, Ferry Bldg., San Francisco, Cal.
Foster & Orear, Ferry Bldg., San Francisco, Cal.
C. F. Willersen, Washington st., Marquette.
Pelissier's News Stand, Front st., Marquette.
Lenox Hotel News Stand, Duluth.
Spalding Hotel News Stand, Duluth.
Edward M. Stone's Book Store, Duluth.
Ferninand Ohlendorf, Galveston.
Purdy Book Store, Galveston.
Charles Deferner, Galveston.
Weber & Plum, Seattle, Wash.
Lowman & Hanford, Seattle, Wash.
Standard Book & Stationery Co., Victoria, B. C.
F. LeRay, 1306 Government st., Victoria, B. C.
Thompson Stationery Co., 325 Hastings st., Vancouver, B. C.
Central News Co., 916 Pacific av., Tacoma.
Oregon News Co., 147 Sixth av., Portland, Ore.

A Pernicious Rule

The Rules and Regulations of the Board of Supervising Inspectors of Steam Vessels, as amended at the last meeting of the board, in January, 1911, have been made public. A new clause appears as Section 8, Rule VI, and is as follows:

"On and after July 1, 1911, the owner of every new vessel of over 100 gross tons, when making application for first inspection of the vessel, must furnish the local inspectors of the district where the vessel is to be inspected drawings or blue prints, in plan and section, showing fully the general construction of the vessel, of wood, iron or steel, including dimensions, spacing of frames, disposition of hull plates, outside and in, or of outside and inside planks, construction of decks, construction of transverse and longitudinal bulkheads and location of same, space between decks, and details of principal scarfs, and must also furnish a statement of the shapes, dimensions and unit weights of all structural parts of the hull, and of the kinds of material of which made, including kinds of wood. A full description of the riveting of all parts of an iron or steel hull must be furnished.

"The drawings or blue prints and description of the vessel will be retained in the office of the local inspectors making the first inspection of the vessel."

The rule will doubtless be of interest to designers and builders even though its object is not evident. Obviously it is not for the purpose of enabling the inspectors to pass upon the design or construction, since when application is made for inspection the ship is already completed and ready for sea, even if inspectors were selected for their qualifications as experts in the design and construction of steel ships, which of course they are not, nor does the statute fixing their compensation contemplate the appointment of such.

What the rule does effect, however, whether designedly or otherwise, is to make all the details of design and construction of any ship of over 100 tons gross, public property and open to the inspection of any one who is interested, as provided by Section 15, Rule IX. Instances will readily suggest themselves in which this will work a hardship and virtually take for public use, without recourse, the complete details of any design, no matter how special its nature and without serving any purpose whatever so far as the general welfare is concerned. It is proper that official documents and records should be accessible but it seems to us this rule is entirely too sweeping and inconsiderate in its nature and should be modified so as to in some measure protect the ideas of the designer.

There are many features of ship construction developed from time to time which are exceeding valuable but are not patentable, involving perhaps merely a new method of arranging or assembling standard materials and resulting in reduced cost, the very information a competitor is most anxious to secure but not always easily accomplished, or a certain form of hull may prove exceptionally successful for a particular service and it is especially desirable that this knowledge shall remain, as it should, the property of the designer. This rule, however, takes forcible possession of all these things and throws them open to any who may care to examine.

The rules of the steamboat inspection service have never been noted for their good sense, but this new clause has no justification. We shall be much mistaken if pressure is not brought to bear to bring about its repeal or radical modification before very long.

There is no need nor reason for secrecy as to the construction of any ship so far as public safety is concerned, but there are other ways in which such information as the service may require as a matter of record can be secured without appropriating that which should be the private and exclusive property of others.

Raising the Maine

The War Department is now engaged in raising the battleship Maine, sunk in Havana harbor, and Brigadier General W. H. Bixby, chief of army engineers, is reported to have said that an examination of the hull proves conclusively that the vessel was blown up through the explosion of her own

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

magazines and not by any submarine mine or other external explosives. No candid mind ever believed that Spain had a hand in blowing up the Maine, and the circumstance, deplorable as it was, afforded no cause for an outbreak of hostilities. In fact, had the executive functions of the government been in the hands of a strong man at the time, war would not have been declared; but, as Gen. Bixby says, one cannot turn back the wheels of the world to correct anything.

For raising the wreck congress originally appropriated $300,000 and a board of army engineers was appointed to decide upon a plan to raise the vessel. It was announced that the board would consider suggestions from engineers for the work, and accordingly a great many proposals were received. As known, the board decided upon the plan of surrounding the wreck with caissons forming a watertight cofferdam. The conditions in Havana harbor made this a very difficult task, and it early became apparent that the sum of $300,000 was not sufficient. Last March congress increased the appropriation to $1,000,000. The Maine was sunk in 37 ft. of water. For a depth of 18 ft. 20 in. the bottom of the harbor where the wreck lies is mud and from 25 to 30 ft. below that is soft blue clay. The building of cofferdams to withstand so great a pressure upon such a foundation is said to be without precedent. An additional difficulty was presented by the fact that the caissons could not be braced by struts on the inside of the cofferdam. The necessity of removing the cofferdam after the wreck was raised had also to be taken into consideration. The cofferdam is built of 22 steel caissons, the six on each side of the wreck being 50 ft. in diameter and the five at each end 40 ft. in diameter. The caissons were sunk to a depth of 33 ft. below the bottom of the harbor and afterward filled with clay which, hardening, made of them solid piers able to sustain the enormous pressure brought to bear as the Maine is pumped out. The unwatering process has begun and a fair portion of the hull of the battleship is now visible.

Firearms Aboard Ship

A determined effort is being made on the great lakes to eliminate drinking aboard ship. In one of the leading companies the mere smell of liquor on the breath is sufficient cause to discharge a man. A wheelsman on the steamer A. C. Dinkey was shot and killed by a drunken deckhand at Ashland on June 6. The causes leading up to this unfortunate tragedy are not uncommon. Two deckhands went ashore while the steamer was loading at the ore dock. They drank themselves out of funds and then returned to the boat and asked the captain to pay them off. The captain, who had just come from the dining room, met them on the deck and declined their request. He started toward his quarters, the deck hands folowing him and abusing him. Finally one of the deckhands struck him and the other endeavored to do so when he was stopped by Charles McMahon, a wheelsman. Meanwhile the mate ran from the dining-room and separated them. Both deckhands then went to their rooms and someone warned the captain that they were getting revolvers. Both the captain and the mate immediately went to their quarters to arm themselves and were starting aft again when a shot was fired and McMahon fell. He died on the way to the hospital. He was a sober, clean-cut young fellow and the company thought highly of him.

President Coulby has issued an order that firearms are not to be permitted aboard any of the vessels of the Pittsburg Steamship Co., and that no man is to be shipped who is under the influence of liquor. It is very common indeed for deckhands to employ the time while the ship is loading in getting drunk and nearly every mate and second mate can testify that they have had their hands full with drunken deckhands demanding their pay. This element cannot be eliminated too quickly from lake trade.

Ore Shipments During June

Iron ore shipments during June were 4,826,505 gross tons as against 7,316,592 gross tons for June 1910, a decrease of 2,490,087 gross tons. The movement to July 1 of the present year was 8,842,908 gross tons as against 14,918,258 gross tons for the corresponding period last year, a decrease of 6,075,350 tons. It will of course not be difficult to overtake this lead if conditions of trade improve. Conditions are improving slowly, as noted by the fact that the June movement was 1,141,686 tons greater than the May movement, when 3,684,819 tons were moved. Ore sales are increasing slowly and vessel owners expect a reasonable improvement in conditions within a month. Some of the leading shippers expect to have all their vessels in employment by Aug. 1. Following are the ore shipments by ports:

Port.	June, 1910.	June, 1911.
Escanaba	767,618	538,168
Marquette	533,358	314,807
Ashland	708,248	394,555
Superior	1,321,877	1,635,651
Duluth	2,567,077	1,102,979
Two Harbors	1,418,414	840,345
Total	7,316,592	4,826,505
1911 decrease		2,490,087

Port.	To July 1, 1910.	To July 1, 1911.
Escanaba	1,739,735	1,067,708
Marquette	1,150,244	533,738
Ashland	1,515,555	662,412
Superior	2,632,835	2,951,490
Duluth	5,097,262	2,050,134
Two Harbors	2,782,627	1,577,426
Total	14,918,258	8,842,908
1911 decrease		6,075,350

Lake Erie Ore Receipts

Out of a total shipment of 4,826,505 tons of ore during June, 3,746,383 tons were received at Lake Erie ports, distributed as follows:

Port.	To July 1, 1910.	To July 1, 1911.
Escanaba	1,739,735	1,067,708
Marquette	1,150,244	533,738
Ashland	1,515,555	662,412
Superior	2,632,835	2,951,490
Duluth	5,097,262	2,050,134
Two Harbors	2,782,627	1,577,426
Total	14,918,258	8,842,908
1911 decrease		6,075,350

The Great Lakes Steamship Co. has been formed to take over the fleets hitherto managed by the United States Transportation Co., the L. C. Smith Transit Co., the Wilkinson Transportation Co., the Standard Transportation Co. and the American Transit Co. Mr. Horace S. Wilkinson is the president of the new company. The bonds on the fleet, amounting to $1,800,000, will be refunded by a new issue and by the sale of capital stock. The vessels will operate without insurance, but a sinking fund of $600,000 will be created out of which all insurance claims will be paid. The combined fleet numbers twenty-one vessels.

Generated on 2024-08-28 11:12 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Battleship Wyoming Launched

THE United States battleship Wyoming was launched at Cramp's ship yard, Philadelphia, on May 25, the contract having been let for her construction in August, 1909. The general dimensions and features of the Wyoming are:

	Ft.	In.
Length on the load water line.....	554	
Breadth, extreme, at load water line.	93	2⅝
Mean draught at bottom of keel trial displacement (about)	28	6
Mean trial displacement, tons	2,500	
Total coal bunker capacity (about)..	2,500	
Coal and fuel oil carried on trial, tons.	1,933	
Feed water carried on trial, tons....	187	
Speed on trial, not less than, knots..	20½	

Armament.
- Main battery—Twelve 12-in. 0.50 caliber breech loading rifles.
- Two submerged torpedo tubes.
- Secondary battery:
  - Twenty-one 5-in. rapid fire guns.
  - Four 3-pounder saluting guns.
  - Two 1-pounder semi-automatic guns for boats.
  - Two 3-in. field pieces.
  - Two machine guns, caliber 0.30.

The Wyoming and her sistership Arkansas, building at Camden, are the first vessels of the United States navy to carry twelve 12-in. guns all mounted in center line. This disposition of guns had its origin in designs prepared by the United States navy department and has been copied to some extent by other countries. The greatest number of 12-in. guns carried in any vessel of the United States navy hitherto has been ten, so that these two battleships have an increase in battery power of 20 per cent.

The side armor will have a mean thickness of 10 in., the upper casement will have a thickness of 6½ in.; the barbettes where exposed to fire will be 11 in. thick and the turret armor 12 in. thick. It will be seen that speed has been somewhat sacrificed for staying power in these battleships. In actual conflict the Wyoming should give a good account of herself, as both her armor and armament is in excess of that of contemporaneous vessels.

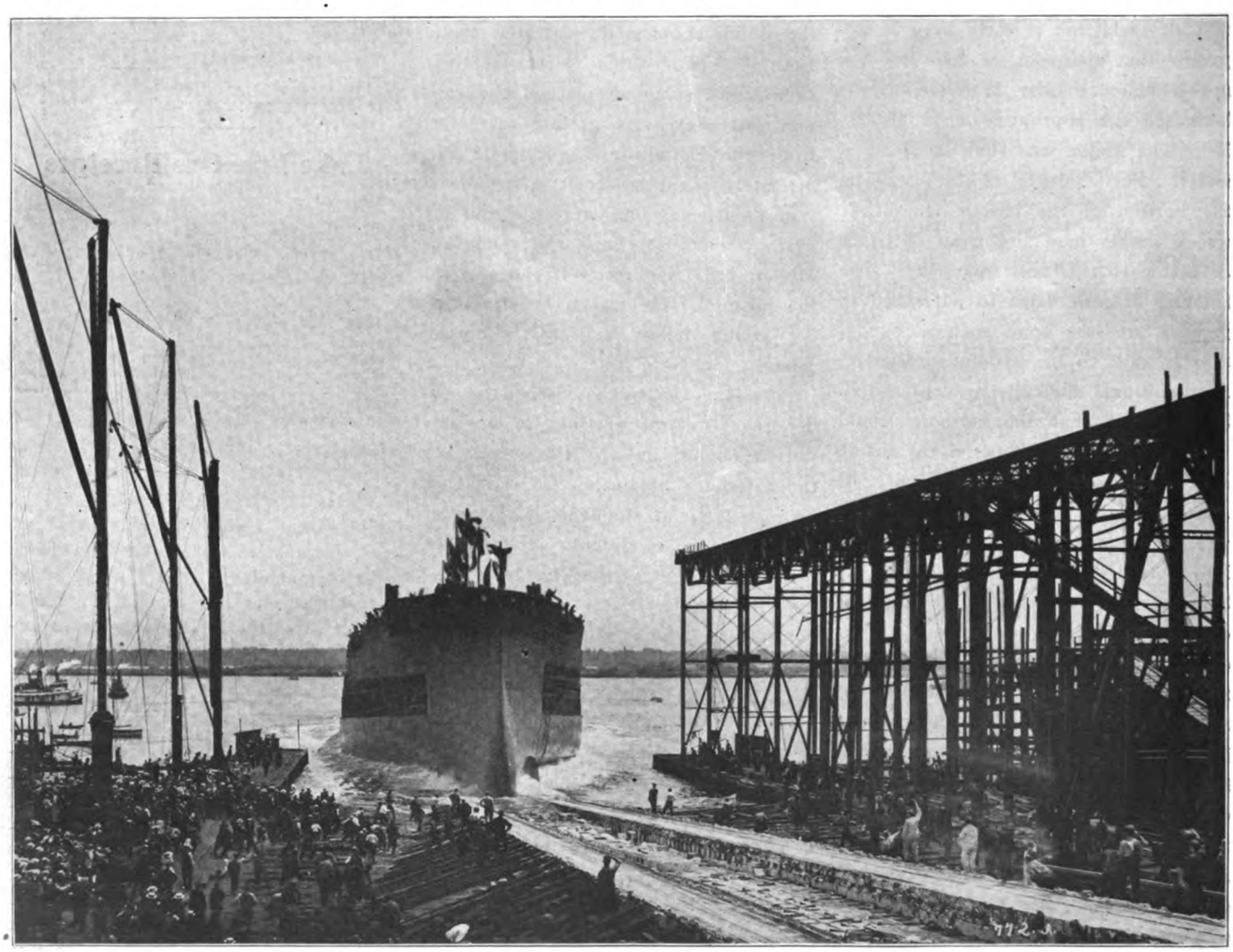
The Wyoming weighed approximately 12,000 tons and is the heaviest warship ever launched. The launching ways were 6 ft. 6 in. wide and the pressure per square foot on the ways was equal to 2¼ tons.

The machinery of the Wyoming consists of Parsons turbines and Babcock & Wilcox water-tube boilers fitted for burning both coal and fuel oil. The turbines drive four screws.

Cultivating Export Trade

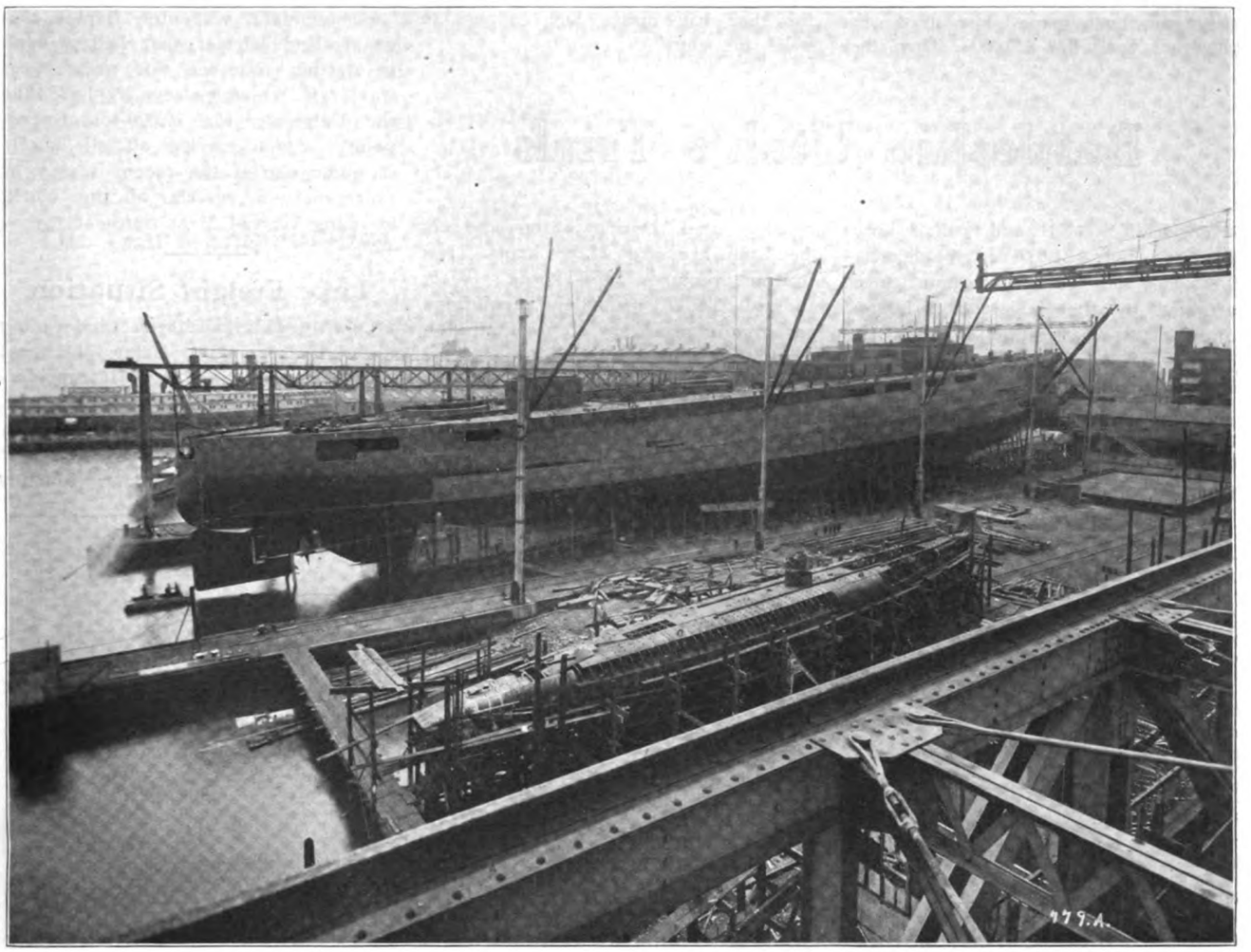
It has been a matter of comment frequently in trade journals, and especially in consular reports, that American manufacturers do not cultivate foreign trade in the right way. William C. Redfield, of the American Blower Co., has corroborated this in a letter to his company from Calcutta. Mr. Redfield is making a tour of the world. In the letter he says:

"I have now traversed Japan, the Philippines, Hong Kong, the Straits Settlements and Burma to India. This covers the possessions of the United States, Holland and Great Britain in the east, as well as Japan; I cannot say that thus far I have found any prejudice against American goods. Indeed, certain classes of American products have been



BATTLESHIP WYOMING LEAVING THE WAYS AT CRAMP'S SHIP YARD, PHILADELPHIA.

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



LAUNCHING THE BATTLESHIP WYOMING AT CRAMP'S SHIP YARD, PHILADELPHIA.

everywhere in evidence. Among these are sewing machines, typewriters, toilet articles and soaps, locomotives (in Japan) petroleum products and others. These are precisely those that have been most carefully and steadily brought before and kept before the attention of buyers in these various lands. I ought also to add that American cameras and photographic supplies were everywhere except in Java; there no films of any kind could be had, only plates. In many stores finding one article selling I would ask why not such and such another only to find simply that they did not know of it, and in some cases to have a note at once made of it.

"I have run across horrible neglect in packing even after attention was called to it. In one case oil stoves were formerly bought in America and the American product was concededly better, but, after warning, the American goods were so badly shipped that *one-half* of one shipment arrived broken. Now the dealer buys in Europe and pays a higher price. He told me he did not want to do this, but he had to, for American makers would not listen to him.

"Bitter complaint is made that American houses trust young irresponsible boys to do their mailing instead of having some clerk of fair responsibility attend to this important service. The result is misaddressed letters so that responses are not received, and the regular habitual neglect to prepay postage causing extra charges.

"A large Boston house wrote to Manila, June 8, and on June 25 followed it up with a sharp letter insisting on an immediate reply. A New York firm referred an inquiry from Panama to its Manila agent. These are some of the things that handicap Americans.

"I do not find prices to be the obstacle. Several American manufacturers I have met tell me their prices are lower than their European competitors. This is true of locomotives for example.

"What I find chiefly needed to greatly enhance our export trade in America is knowledge—knowledge of geography—of the peoples, their ways and needs—their business methods.

"Foreign trade does not essentially differ in its basis from domestic trade. A man selling in Michigan studies Michigan needs, offers goods Michiganders want, tells about them in the way the good people of Michigan understand. If he does not do so, the wise ones in Michigan turn him down. A man in larger trade does not assume that Texas and Florida use the goods that sell in Maine. He finds out what are wanted or not wanted and acts accordingly. You don't spend much on heating apparatus for Louisiana, and this is all there is underlying export trade, but because it is just outside the immediate horizon and men are busy, they often do not even inquire about it and when they do and find that it takes time and care and patience they take the near and obvious and let the other go. In this way the trade of Empires is neglected and great opportunities are lost. Sometimes houses 'peter out' and give up the game too soon to win. Two concerns came from America to India, where the prejudice, not so much against American goods as in favor of English goods, is very strong. One after six months began to reduce expenses, took a smaller office, then a still smaller one, then closed up. The other lost $20,000 the first year; they had a good man on

Generated on 2024-08-28 11:18 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the spot and held on. The second year they came out even. The third year they got back the $20,000. Then they got it back many times with interest, for they had means and courage to stand the gaff."

Battleship Utah's Trials

TWENTY-ONE and a half knots an hour—21,637 to be exact—was the record maximum speed attained by the newest and biggest and fastest battleship of the American navy now afloat—the Utah, in her standardization trial trip off the coast of Maine, thus exceeding the government speed requirements by more than a knot. The news was flashed by wireless from aboard the giant craft direct to officials of the New York Shipbuilding Co., in Camden, her makers, upon the completion of the tests.

The test required eight hours to complete, the big battleship going on the Rockland course a little after eight o'clock, and made 20 runs as her standardization trial. There were three runs each at 10 knots, 12 knots, 19 knots and 20¾ knots, then five at the highest possible speed, followed by three runs at 16½ knots.

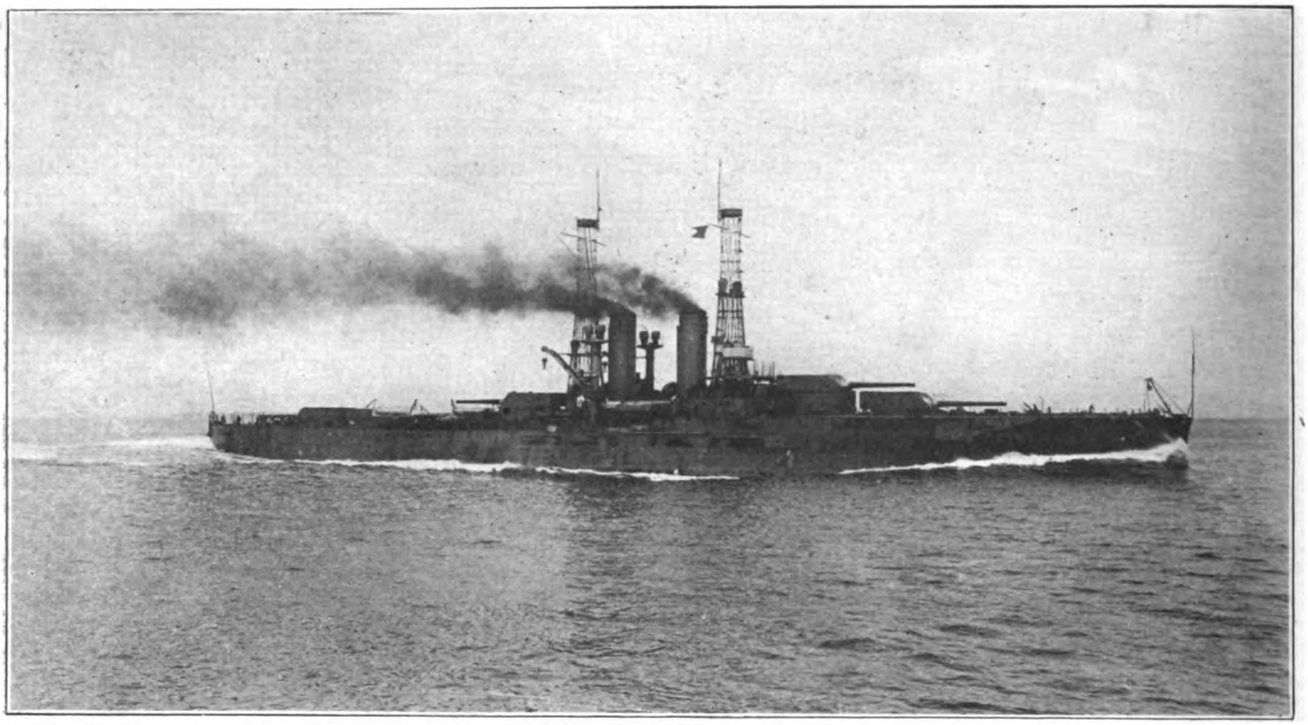
During three of these runs she made a speed of 10.556 knots, on three others 12.015, on another group of three 16.799 knots, and in still another 19,049. In addition to these there were five top speed runs and three at cruising speed. During the top speed runs the Utah averaged 21.288 knots. Her contract requires 20.75 knots. Tests showed 329.17 propeller revolutions per minute necessary to maintain the maximum speed and 314.5 necessary for the contract speed. The engines developed 28,477 horsepower.

In addition to her standardization runs, the Utah was given a trial displacement, this showing 21,247 tons, and an anchor-test, both of which proved satisfactory. Capt. William G. Randle was in charge of the battleship.

On board were DeCourcey May, president of the New York Shipbuilding Co., Capt. William S. Benson, who is to command the ship when she goes into commission, the members of the board of inspection and survey, and others.

The battleship is 98.4 completed and it is now expected that she will be ready to go into commission about Aug. 10.

The receipt of the news of the speed trials at the Camden plant gave rise to the greatest gratification among the officials of the firm, and none the less among every foreman, superintendent, carpenter, riveter, mechanic and laborer that had a hand in putting together this greatest of war craft, which exceeds by 1,825 tons the Delaware, the 20,000-ton Dreadnought which carried off all laurels in point size at the recent review of representative vessels of the world by King George V at Spithead.



THE BATTLESHIP UTAH UNDERGOING HER TRIALS ON THE ROCKLAND COURSE.
Photo by the New York Ship Building Co., Camden, N. J.

Lake Freight Situation

Lake trade has been undergoing slight improvement during the past month, though there is still considerable room for further improvement. The shippers are moving in their own vessels more ore than they have ever moved before and the reason for this is that with a considerable part of the independent fleet laid up, their own vessels are getting better dispatch. Ore carriers operating light are suffering very little delay. Wild cargoes continue scarce and the independent owner who gets a cargo of ore accounts himself lucky these days. One fleet of seven vessels which hitherto has been kept busy with both up and down cargoes has scarcely received a single cargo of ore to carry this year. Its vessels are employed exclusively in the coal trade, and have up to now had good dispatch. However, even in the coal trade dispatch is getting a little lax, as more vessels continue to go into commission. Quite a number of coal carriers were forced into tem-

Generated on 2024-08-28 11:12 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

porary activity on July 1 to deliver cargoes of ore which they had taken in storage. Some of the leading shippers have not as yet put all of their vessels in commission, but are hoping that by Aug. 1 trade conditions will have so improved as to justify the employment of the rest of their fleet.

The Year's Shipbuilding

During the fiscal year ended June 30, 1,527 vessels of 302,391 gross tons were built in the United States and officially number by the bureau of navigation, compared with 1,502 vessels of 347,025 gross tons for the fiscal year ended June 30, 1910. The decrease is due to a falling off of 65,000 tons in shipbuilding on the Great Lakes, anticipated in Secretary Nagel's report last year. The largest vessel built on the Lakes was the bulk freighter William P. Palmer, of 7,602 gross tons. On the seaboard the Honolulan, of 7,059 gross tons was the largest steamer built under the coastwise laws for Tehuantepec railroad trade. No vessels were built exclusively for foreign trade, and no square rigged vessels.

The year's construction comprised 1,123 steam and motor vessels of 246,540 tons, 85 sail vessels of 11,398 tons, and 319 unrigged barges and canal boats of 44,453 tons, tabulated as follows:

	Wood. Sail. No.	Wood. Sail. Gross.	Wood. Steam. No.	Wood. Steam. Gross.	Steel. Sail. No.	Steel. Sail. Gross.	Steel. Steam. No.	Steel. Steam. Gross.	Total. No.	Total. Gross.
Atlantic and Gulf	65	8,156	432	18,990	4	2,208	66	114,581	567	143,935
Porto Rico	6	156	3	26	..	.....	...	.....	9	182
Pacific	8	823	277	9,372	..	.....	9	12,392	284	22,587
Hawaii	..	.....	1	22	..	.....	...	.....	1	22
Great Lakes	2	55	142	2,467	..	.....	44	83,134	188	85,656
Western rivers	..	.....	146	4,375	..	.....	3	1,181	149	5,556
Total	81	9,190	1,001	35,252	4	2,208	122	211,288	1,208	257,938

During the corresponding year ended June 30, 1910, 1,169 sail and steam vessels of 279,757 gross tons were built in the United States and officially numbered, as follows:

	Wood. Sail. No.	Wood. Sail. Gross.	Wood. Steam. No.	Wood. Steam. Gross.	Steel. Sail. No.	Steel. Sail. Gross.	Steel. Steam. No.	Steel. Steam. Gross.	Total. No.	Total. Gross.
Atlantic and Gulf	111	15,355	389	11,877	7	3,954	44	82,335	551	113,519
Porto Rico	6	38	2	18	..	.....	1	92	9	148
Pacific	9	1,758	238	6,887	1	32	7	3,165	255	11,842
Great Lakes	..	.....	152	3,177	..	.....	47	146,896	199	150,073
Western rivers	1	8	150	4,044	..	.....	4	123	155	4,175
Total	127	17,159	931	26,003	8	3,986	103	232,609	1,169	279,757

COMPARATIVE STATEMENT.

1911.	No.	Tons.	1910.	No.	Tons.
Sail and steam	1,208	257,938	Sail and steam	1,169	279,757
Unrigged	319	44,453	Unrigged	333	67,268
Total	1,527	302,391	Total	1,502	347,025

June Lake Levels

The United States Lake Survey reports the stages of the Great Lakes for the month of June, 1911, as follows:

Lakes.	Feet above tide-water, New York.
Superior	601.34
Michigan-Huron	579.98
Erie	571.90
Ontario	245.66

Lake Superior is 0.44 foot higher than last month, 0.56 foot lower than a year ago, 1.20 feet below the average stage of June of the last ten years, 2.09 feet below the high stage of June, 1876, and 0.10 foot above the low stage of June, 1879. It will probably rise 0.2 foot during July.

Lakes Michigan-Huron are 0.28 foot higher than last month, 0.57 foot lower than a year ago, 1.12 feet below the average stage of June of the last ten years, 3.62 feet below the high stage of June, 1886, and 0.08 foot above the low stage of June, 1896. They will probably rise 0.1 foot during July.

Lake Erie is 0.03 foot higher than last month, 0.71 foot lower than a year ago, 0.96 foot below the average stage of June of the last ten years, 2.62 feet below the high stage of June, 1876, and 0.33 foot above the low stage of June, 1895. It will probably remain about stationary during July.

Lake Ontario is 0.06 foot higher than last month, 0.80 foot lower than a year ago, 1.18 feet lower than the average stage of June of the last ten years, 2.97 feet below the high stage of June, 1870, and 0.77 foot above the low stage of June, 1895. It will probably remain about stationary during July.

Bulk Freighter John Mitchell Sunk

The bulk freighter John Mitchell was sunk in collision with the steamer W. S. Mack about eight miles above White Fish Point, Lake Superior, early Monday morning, July 10, there being dense fog prevailing. The impact was mortal and the Mitchell sank almost immediately, three members of her crew being drowned. The remainder of her crew and her passengers, guests of the management, managed to cross over a ladder to the Mack, which stood by. The Mitchell was owned by C. W. Elphicke of Chicago and was built at the St. Clair yard of the Great Lakes Engineering Works in 1907. She was 440 ft. over all, 420 ft. keel, 52 ft. beam and 28 ft. deep.

Commerce of Lake Superior

The commerce passing through the St. Marys Falls canal during the month of June amounted to 7,476,087 tons, being an increase of 1,351,069 tons over the May movement. The freight passing through the canals to July 1 amounts to 14,393,692 tons as against 20,327,071 tons for the corresponding period during 1910, a decrease of 5,933,379 tons. Following is the summary:

EAST BOUND.	To July 1, 1910.	To July 1, 1911.
Copper, net tons	39,610	38,181
Grain, bu.	16,002,846	10,430,087
Building stone, net tons.	500	1,352
Flour, bbl.	2,085,397	1,717,918
Iron ore, net tons	14,111,808	8,241,337
Pig iron, net tons	5,691	10,088
Lumber, M. ft. B. M.	23,596,451	159,321
Wheat, bu.	36,301	22,438,516
Unclassified freight, net tons	5,250	27,661
Passengers, number	.....	6,885
WEST BOUND.		
Coal, anthracite, net tons	642,670	520,000
Coal, bituminous, net tons.	3,350,029	3,689,282
Flour, bbl.	1,000	125
Grain, bu.	2,100	.....
Manufactured iron, net tons	162,560	118,060
Iron ore, net tons	.....	9,486
Salt, bbl.	276,335	236,477
Unclassified freight, net tons	403,337	397,598
Passengers, number	6,732	8,655
SUMMARY OF TOTAL MOVEMENT.		
East bound, tons	15,727,533	9,624,131
West bound, tons	4,599,538	4,769,561
Total	20,327,071	14,393,692
Vessel passages	6,715	5,214
Registered tonnage, net	16,978,402	11,470,473

M. J. Cummings, of Oswego, N. Y., died at Atlantic City on June 20. He had been identified with lake commerce for nearly half a century. The last boat he built was the steamer Western Star, which was constructed in 1903.

The barge Antrim, which has a capacity of 6,000 tons, will be converted into an oil carrier, the vessel having been sold to the Standard Oil Co. by the Gilchrist Transportation Co., of Cleveland.

All the vessels of the Hawgood fleet with the exception of the Curry have been merged into the Acme Transit Co. The Curry is owned by the Hawgood & Avery Transit Co.

Generated on 2024-08-28 11:16 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

New Steel Barge E. E. Green

The new steel barge Edward E. Green, built by the American Bridge Co., Ambridge, Pa., for the Mississippi Valley Transportation Co., of St. Louis, has made her initial trip from New Orleans to St. Louis in tow of the tow boat Mariner. The barge is built entirely of steel and is 200 ft. long, 36 ft. wide and 10½ ft. deep. She is the first of the fleet of barges to be built for this new company, of which W. J. Kavanaugh is president and general manager. The Green carried a cargo of 1,200 tons of sugar.

THE BARGE E. E. GREEN, OF THE MISSISSIPPI VALLEY TRANSPORTATION CO.'S FLEET.

Lloyds Register of American Yachts

The ninth annual edition of Lloyds Register of American yachts differs from its immediate predecessors only in the increasing predominance of power over sail and of the gas engine over the steam engine; the proportion of the power craft being still greater than last year, while individual examples show the rapid growth in size of the gas-propelled type.

In spite of its lessening numbers and tonnage, the sailing division of the fleet claims first notice this year through three important additions to the schooner class, Enchantress, Elena and Karina. The first, designed by Cary Smith & Ferris and built by the Lawley & Son Corporation, is for William E. Iselin, who last year sold the yawl Vigilant, which he had used for some years. The new yacht is of steel, 136 ft. over all; 100 ft. on the waterline; 27 ft. breadth, and draws 15 ft. without her centerboard. She was built to Lloyds rules, classing 100 A1, and she represents the latest advance in yacht construction; by way of a minor detail, the metalwork of blocks and fittings is of specially imported steel. Karina, designed by Theodore D. Wells and built by the Staten Island Ship Building Co. for Robert E. Tod, replaced the well-known Thistle, and like her is designed for offshore cruising. She is of steel, 198 ft. 7 in. over all; 150 ft. on the waterline; 33 ft. 9 in. breadth and 17 ft. draught, with no centerboard. She has three masts with fore-and-aft rig. Elena is a new racing schooner for Morton F. Plant, a successor to the schooner Ingomar, which he raced with such success abroad and at home a half a dozen years since. She is of steel, a keel vessel, designed by N. G. Herreshoff and built at the Bristol shops; 136 ft. 6 in. over all; 96 ft. on the waterline; 26 ft. 8 in. breadth and 17 ft. draught. Her dimensions are closely identical with those of last year's Westward, which yacht will meet her this season in home waters, but while Westward was built to the International rating rule with its strict scantling limitations, for racing abroad, in Elena Mr. Herreshoff has been free to cut the weight of construction and at the same time has had to consider only the American rule, with its less onerous restrictions. The relation of these three modern yachts to the gas engine is in itself most interesting: Elena is strictly a sailing yacht, and her owner has already the ocean cruiser Iolanda, of 1,647 tons; as a special tender to Elena, he has a new twin-screw steamer of 141 tons, of 138 ft. overall length, designed by Charles L. Seabury and built by the Seabury company, with two 6-cylinder 11 x 12 Speedway engines. Enchantress is thus far a sailing yacht, but fitted for the ultimate installation of gas engines; and Karina is similarly designed. The former, however is now fitted with a 25-H. P. gas engine providing power for the electric sail hoists, capstan, lighting system, etc. In contrast with the addition of these three vessels to the list may be noted the passing of the once noted Jubilee, Gen. Paine's cup-defender of 1893; sold at last for junk after some years of idleness.

The most notable of the power yachts is the Sovereign, designed by Charles L. Seabury and built at the Morris Heights Works for M. C. D. Borden. This yacht is plated with bronze on steel frames, being designed and built under a guarantee of 35 miles per hour; which speed she easily exceeded on her initial trial. She is 166 ft. over all; 160 ft. on the waterline; 16 ft. 6 in. breadth, and 4 ft. 6 in. draught; being intended for use between New York City and Mr. Borden's home on the Shrewsbury river. In view of the good work of her immediate predecessor, Little Sovereign, and her obvious perfection of form and surface and the amount of her power (two four-cylinder triple steam engines) she is likely to make a record for actual service speed.

The latest development of the gas-driven yacht is found in the new La Belle II, a steel yacht with triple screws and engines, designed by Cox & Stevens and built by J. H. Dialogue & Sons for Alexander Winton of Cleveland. She is of the conventional steamer type, 140 ft. over all; 117 ft. 6 in. on the waterline, 19 ft. 3 in. breadth and 7 ft. draught. The engines, designed by her owner and built at the works of the Winton Motor Car Co., are of the four-stroke type, six cylinders 9 x 12¾.

In the smaller division of the sailing fleet the additions are limited to the 31 ft. and smaller classes, and are of little more than local importance. The power division, however, includes many new cruising yachts

Generated on 2024-08-28 11:16 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

of all sizes from 100 ft. downward, practically all equipped with gas engines.

The Register is but slightly larger than last year, a very thorough revision resulting in the dropping of many old yachts; the book contains 468 pages and 45 colored plates; the yacht list proper including over 3,500 vessels. The particulars of 472 yacht clubs and thirty-one associations within the limits of the United States, the Dominion of Canada and the West Indies are given; with the burgees of 456 clubs and associations. As closely as can be estimated, there are at the present time at least 600 yacht clubs within the territory mentioned, but many of the younger clubs in remote localities fail to reply to requests for the particulars necessary for their entry in the Register.

The list of yacht owners includes the names of 3,300 owners, with the full address wherever it can be obtained; as well as the clubs to which each belongs and a reference to the yachts which he owns.

It has always been the custom to include in the Register a list of yacht designers, yacht builders, engine builders and others connected with the building and equipping of yachts; this year these lists appear in a new and extended form, making a very complete directory of the yacht trade. In view of the very large number of miscellaneous fittings and appliances which go to make up the modern yacht, even of the smallest size, it is hoped that this list will prove of permanent value to yacht owners as an index of what is offered them by manufacturers and dealers.

The style of the book is unchanged, the familiar blue and gold binding, which is the standard for club use and the larger yachts; and the plain canvas designed for use on the small cruisers.

Loan Library

The loan library department of the American Seamen's Friend Society, 76 Wall street, New York City, has been conducted continuously since its establishment in 1859. The society is 83 years old, and this is only one of its various activities. It is the aim of the Society to place a library on every vessel leaving the port of New York. All its work is limited, however, through lack of funds, and it depends on contributions from the public.

A loan library has 40 or more volumes. The books are selected with great care, and consist of works that are helpful in the direction of education, books of travel that are accepted as standards, novels that point a moral, an atlas, dictionary, and books of a religious nature. Most of the works are, of course, in English, but every library has German, Norwegian and Swedish books.

The libraries are in cases, and placed in charge of captains and mates, who distribute the books to the crews. These are changed at intervals and placed on all classes of sailing craft, including barks, barkentines, schooners and ships. As many of these vessels do not touch port for weeks—and even months—at a time, it can readily be seen what a far-reaching effect these books are likely to have on the lives of sailormen. Often there are few, if any, other books on board. The American Seamen's Friend Society feels a sense of guardianship and responsibility not only in this, but in all other branches of its activities; hence the care that is exercised in the selection of reading matter.

Hunt Coal Handling Equipment

The C. W. Hunt Co., 45 Broadway, New York, recently issued catalog No. 114, descriptive of grab buckets and coal tubs. The catalog also contains an interesting article on what Hunt machinery did for one coal dealer. The plant in question is situated in New York harbor and is equipped with Hunt electric hoist and automatic railway.

With the previous equipment, the coal was hoisted by horsepower and trimmed into the stock pile. The old equipment cost $1,750, the new one $2,800. The cost of handling to the stock pile, interest and depreciation included, was, with the old plant, 17¾ cents per ton; with the new plant the cost is 7¼ cents.

The unloading capacity with the old plant was 120 tons per day; with the new machinery the capacity is 200 tons per day, an increase of 80 tons.

The power is purchased by meter at 5 cents per horsepower hour, and costs less than 7 mills for each ton of coal hoisted and delivered to the car.

The labor required to operate the new plant, in taking the coal from the vessel to the stock pile, is as follows: Three shovelers are employed in the hold of the vessel, one man operates the electric hoist, another man dumps the coal into the car, weighs it, and attends to the automatic railway.

It has been found that the convenience of the new plant is another important element in its favor. It is always ready for service by switching on the electric current for driving the hoist. When the unloading of a boat has been completed, the switch is opened and the attendants can leave the machinery at once. Another important factor is the facility for weighing the coal. The automatic car stands on the scale platform while being filled, and the exact weight of each load can be noted before the car starts on its trip.

Deviation Tables for the Rivers

Captain Charles A. Anderson, of the Cleveland-Cliffs Iron Co.'s fleet, has prepared a new deviation table for the great lakes. The tables have been made up in book form and cover a season's work for one steamer. They contain the magnetic courses on all standard government ranges in the Detroit, St. Clair and St. Mary's rivers. They are made up in sets of four sheets, two for upbound and two for down-bound. There are four blank columns for recording compass readings for two compasses, also the deviation. As the different ranges are passed the record is noted.

Four deviation cards are also provided which can be filled out at the completion of a trip. The running time for St. Mary's river is also published. The tables are for sale by THE MARINE REVIEW. The price is 75 cents.

The steamer Angel Island is rapidly nearing completion at the yard of the United Engineering Company at Alameda, Cal., and it is expected that the vessel will be launched during the current month. Angel Island is being built for the United States Immigration Service and has a steel hull, 144 ft. in length, 24 ft. beam and 11 ft. 9 in. depth of hold. The vessel will be fitted with a fore and aft compound engine of 650 horsepower, with a Babcock & Wilcox watertube boiler. Construction was commenced on the Angel Island in July, 1910, but on account of changes, which have been made in the specifications from time to time by the Treasury Department the time of completion has been changed until it has taken nearly a year to do the work. It is expected that the vessel will be placed in commission early in August.

The Watsonville Railway & Navigation Co. has let the contract for a reinforced concrete wharf to be 1,700 ft. in length and to cost $50,000, to be erected at Port Watsonville, Cal. for a new line of steamers.

Generated on 2024-08-28 11:14 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

ACCIDENTS TO LAKE VESSELS

The accident list in June would have been low as far as monetary loss is concerned had it not been for the extensive fire on the North West, resulting in a damage of about $200,000. The steamer I. W. Nicholas ran ashore in Georgian Bay and badly damaged her bottom. About thirty-nine plates will have to be removed. Collisions appear to be of more frequent occurrence than is necessary. The steamer Queen City in endeavoring to pass the steamer Charles L. Hutchinson near the Limekiln crossing, both upbound, was caught in the suction of the Hutchinson's wheel and headed straight into her, stoving her own bow in and damaging the Hutchinson somewhat. Stranding was the most frequent cause of accident during the month. Derangement of steering gear had its usual quota.

Date.	Name of Vessel.	Nature of Accident.	Place.
June 1	Str. Brazil	Collided with steamer John Stanton; damaged forward; docked at Manitowoc; one week in dry dock; steamer Stanton not damaged.	Lake St. Clair.
June 3	Str. Maitland	Badly damaged by fire	Buffalo.
June 3	Str. Ontario	Ran aground owing to breaking of her steering wheel; released after lightering 350 tons of coal; not damaged	Off Bar Pt., Detroit river.
June 3	Str. North West	Badly damaged by fire; interior entirely ruined; loss about $200,000; sank in shallow water; all port holes broken in; raised June 15	Blackwell canal, Buffalo.
June 3	Str. North Land	Damaged by fire while lying alongside steamer North West; damage estimated at $1,000	Blackwell canal, Buffalo.
June 4	Str. Meaford	Ran aground in thick fog	Watson's reef, Lake Huron.
June 4	Str. Robert Wente	Ran aground in dense fog; released June 6	Graham shoal.
June 5	Str. James Laughlin	Ran aground in heavy fog; released on June 6 after lightering and hard pulling by tugs	Stag Island, St. Clair river.
June 5	Str. Sacramento	Ran aground; released June 8 by tugs	Middle Ground, Lake Huron.
June 8	Str. Empire City	Ran aground; released on June 9 after lightering about 300 tons; reloaded lightered cargo; not damaged	Southeast shoal, Lake Erie.
June 11	Bge. J. D. Marshall	Turned turtle, drowning four of her crew; deck load of sand thought to have shifted	Near Michigan City, Lake Michigan.
June 12	Naval training ship Essex	Hit by steamer Wyandotte; all port davits broken off and several small boats knocked off	Toledo, O.
June 12	Str. M. & B. No. 2	Struck by lightning; one of spars slightly damaged	Lake Erie.
———	Str. Oscoda	Ran on reef in dense fog and was hit by barge Filer, which she had in tow; cabin nearly torn off and engine somewhat damaged; taken to Green Bay, where she was docked	Gull Island reef, Lake Michigan.
———	Bge. D. L. Filer	In tow of steamer Oscoda when she ran aground; stem split; taken to Green Bay for repairs	Gull Island reef, Lake Michigan.
———	Bge. S. J. Tilden	In tow of steamer Oscoda when she ran ashore; released and taken to Green Bay for repairs; quite badly damaged	Gull Island reef, Lake Michigan.
———	Str. L. L. Berth	While trying to release steamer Oscoda and her barges, ran on reef herself; pulled off by tug after lightering 250 tons of coal; not damaged	Gull Island reef, Lake Michigan.
June 13	Str. City of St. Ignace	Picked up log in her wheel, damaging paddlebox	Lake Erie.
June 14	Str. James Gayley	Hit B. & O. pipe dock at Main avenue, damaging three plates; dock damaged also to extent of $700 or $800	Cleveland.
June 14	Str. Caledonia	Hit a dock; docked for repairs	Buffalo.
June 16	Str. Western States	Blew out her high pressure cylinder head	Lake Erie.
June 16	Str. Petoskey	While leaving harbor hit obstruction and damaged her rudder; towed to Chicago for repairs	South Haven, Mich.
June 18	Str. John Oades	Ran aground in heavy fog	St. Clair river.
June 18	Str. Gen. O. M. Poe	Ran aground on west shore; released by tugs, uninjured	Limekiln Crossing, Detroit river.
June 18	Str. City of Ottawa	Stranded in dense fog; released by tugs	Round Island, middle ground.
———	Str. Corsica	Struck on her way up; docked at South Chicago June 20 for repairs; four damaged plates	
June 20	Schr. Alex. Anderson	Lost one of her spars which caught in rigging of Irishtown coal plant and broke off close to the deck; pilot house pretty badly damaged; made repairs in outer harbor	Cuyahoga river, Cleveland.
June 22	Str. R. L. Fryer	Ran aground; released, uninjured	Bois Blanc Island, Detroit river.
June 24	Str. Wm. H. Gratwick (large).	Ran aground; lightered over 500 tons of coal and was released on June 25; not seriously injured	Buffalo harbor entrance.
———	Str. Polynesia	Broke hub of her wheel; towed from Waukegan to South Chicago where she was docked for repairs. While being towed out of dry dock July 3, tugs ran her into a bridge, breaking her quadrant and two buckets off her wheel; had to go back into dry dock	
June 23	Str. Hinckley	Struck by lightning; 40 ft. of main mast shattered	Lake Ontario, near Charlotte.
June 25	Str. Codorus	Struck Chestnut street bridge, damaging it to extent of several hundred dollars	Milwaukee.
June 25	Schr. E. L. Neilson	Collided with steamer Wyandotte and was sunk; crew escaped; steamer Wyandotte only slightly damaged	Near Point Aux Barques, Lake Huron.
———	Str. I. W. Nicholas	Ran aground; released June 26 and went to Lorain to be docked; thirty-nine bottom plates damaged; repair bill between $25,000 and $30,000	Georgian Bay.
June 26	Str. James S. Dunham	Blew off head of her high pressure cylinder; temporarily repaired at Alpena	Off Thunder bay light, Lake Huron.
June 26	Str. Benjamin Noble	Ran aground; lightered 200 tons and was released, uninjured	Mission Pt., St. Marys river.
June 27	Str. Fulton	Struck obstruction; one propeller blade lost; punctured No. 4 tank and 15 plates damaged; temporarily repaired at Sault and proceeded to Superior, where she docked	Off Detour, St. Marys river.
June 27	Str. Widlar	Ran aground in upper river	Cleveland.
June 28	Str. Arizona	Hit by Grand avenue bridge and part of railing torn off	Milwaukee river.
———	Str. J. S. Ashley	Hit by steamer D. O. Mills while lying at dock; rail damaged	Carnegie coal dock, Duluth.
July 1	Str. J. P. Morgan Jr.	Broke her steering apparatus while entering harbor	Conneaut harbor.
July 1	Str. Umbria	Ran aground; lightered 1,200 tons and was released	Grecian shoal, Lake Erie.
July 1	Str. Queen City	Collided with steamer Chas. L. Hutchinson; bow stove in	Limekiln Crossing.
July 4	Str. Shenandoah	Ran aground; released on July 6 after lightering considerable of her cargo	Niagara river.
July 5	Bge. Chieftain	In tow of steamer Shenandoah; also ran aground	Niagara river.
July 3	Tug Hassayampa	Broke down while towing big dredge; air pump broke; towed to Ashtabula harbor	Lake Erie.
July 5	Str. Ball Brothers	Ran aground; released, uninjured	Walpole Island, St. Clair river.
July 6	Tug Knight Templar	Damaged by fire	Milwaukee.

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

A Free Quarterly Technical Publication Devoted to Quick Repair Work and Welding

That is what "Reactions" is. It is brim full of useful information for owners and managers of steamship companies and dock yards. The current issue contains some very interesting articles on shop practice in the various railroad shops and a complete description of the equipment of the U. S. Supply Ship "Dixie," tender to the North Atlantic Torpedo Fleet, and which is a perfectly equipped floating machine shop and foundry.

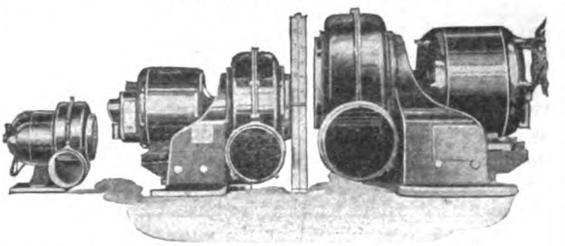
Your name and address on a postal card will bring you "Reactions" by return mail if you mention this advertisement.

Goldschmidt Thermit Co.

William C. Cuntz, Gen. Mgr.
90 West St., New York City
432-436 Folsom Street, San Francisco
103 Richmond Street, W. Toronto, Can.

"Sirocco" Electric
TRADE MARK
FORGE BLOWERS

No. 00 — 1 Light Fire
No. 0 — 1 Heavy Fire, 2 Medium Fires, 3 Light Fires
No. 1 — 2 Heavy Fires, 4 Medium Fires, 5 Light Fires



$40.00 List $75.00 List $140.00 List
Write, Wire or Phone for Discount

"Sirocco" efficiency is embodied in every Sirocco Forge Blower, which means low cost of operation and absolute reliability.
No. 00 requires less current to operate than an ordinary electric lamp.

Descriptive Folder No. 314 R M sent upon request.

AMERICAN BLOWER COMPANY
DETROIT, MICH.
U. S. A.

OAKUM

GRADES
BEST, U. S. NAVY and NAVY
BOTH
SPUN and UNSPUN
ALSO
PLUMBERS' SPUN OAKUM AND COTTON
Established 1840
OUR MOTTO:
"QUALITY, FIRST, LAST, ALWAYS"

Over 70 years of active business made possible only by "Square Dealing"

W. O. DAVEY & SONS

Offices and Factory 164 Laidlaw Avenue
JERSEY CITY, N.J.

Geo. L. McCurdy
169 Jackson Boulevard
CHICAGO ILLINOIS

INSURANCE
HULLS and CARGOES

DIRECT REPRESENTATIVE OF LEADING AMERICAN AND FOREIGN UNDERWRITERS

Generated on 2024-08-28 11:15 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Electric Truck

The Automatic Transportation Co., 2933 Main street, Buffalo, has recently placed on the market an electric truck, designed for handling package freight at railway and steamship terminals, as well as warehouses and manufacturing plants. The power for operating is supplied by storage batteries located in a steel receptacle at one end of the truck. One charge of electricity will operate the truck for one entire day or night. It is very powerful and will negotiate grades with ease. The truck is made in a standard size, which experience has found to be most convenient. Loading space is 42 in. wide and the length is 7 ft. 1 in., which may be increased to 10 ft. 2 in. by lowering a movable gate hinged at the end of the truck. It is so constructed that it may be driven directly into a freight car, turned to either extreme and loaded or unloaded and reversed to the platform, thus reducing handling to a minimum. The truck weighs 1,800 lbs. and will carry from 2,000 to 4,000 lbs. Its price, f. o. b. Buffalo, is $1,250.00.

Trade Notes

The Philadelphia Electric Co. have just given the American Ship Windlass Co., manufacturers of the Taylor stoker, their third order, covering eight stokers, which make a total of practically 15,000 h. p. of Taylor stokers in the Christian street station.

The Newport News Ship Building & Dry Dock Co. launched the steamer Hilton for the A. H. Bull Co., of New York, on June 10. The Hilton is 316.6 ft. long and 46 ft. 1 in. beam.

The first keel plate of the new Cunard liner, Aquitana, was laid at the yard of John Brown & Co., Clydebank, on June 5.

The J. Faessler Mfg. Co., Moberly, Mo., makers of boss and universal flue expanders, flue cutters and other boiler tools, have reorganized their sales department and placed Chas. F. Palmer in charge, as sales manager, with office at 810 Olive street, St. Louis. Mr. Palmer is well qualified for this position through previous experience in selling Faessler tools, and as representative of the Frank E. Palmer Supply Co., of St. Louis.

M. C. Furstenau, consulting engineer and marine architect, 308 Walnut street, Philadelphia, has just issued a catalog to commemorate the fifth anniversary of the establishment of his business. The book is filled with illustrations of vessels, designed by Mr. Furstenau, including ice breaking steamers, car ferries, dredges, harbor tugs, bulk freighters, passenger boats and river steamers, constituting an enviable record.

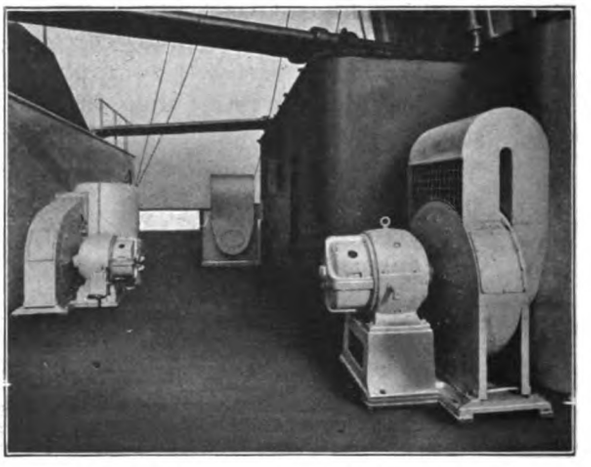
The Union Iron Works, San Francisco, has purchased the dredger-building equipment of the Risdon Iron Works and will organize a dredger-building department under the supervision of R. H. Postelwaite, formerly superintendent of the Risdon Iron Works. The Risdon Iron Works plant was recently purchased by the United States Steel Corporation, to be used as a distributing base for its products in the far west.

Ship Ventilation

The art of ventilation, which is now generally recognized as a most important branch of sanitary science, has probably received even more attention at the hands of the builders of large passenger vessels than has been the case with architects of modern buildings. Certain is it that shipbuilders have far greater difficulties to contend with. For instance, there is a larger number of persons on board in comparison to the space available than on land, involving consequently a larger volume of air than is usually required in buildings, excepting, of course, theatres, etc., where, however, the occupation is only temporary. Further, this volume of air has to be distributed among innumerable cabins at such a low velocity as not to cause a draught, so easily noticeable in confined spaces.

Provision must also be made for warming the air, as well for its removal when vitiated. And all this must be accomplished with the utmost regard to economy of space. Artificial ventilation is now rapidly superseding natural ventilation at sea, as it has been doing for some time past on shore. The difficulty of obtaining with cowls alone an adequate and regular supply of fresh air below deck, and of controlling and distributing the air current produced by them has led the modern shipbuilder to adopt mechanical ventilation with its small and compact units of comparatively high volumetric capacity.

No better example of up to date practice could be found than on that luxurious floating palace, the White Star liner "Olympic," the largest vessel afloat, which starts on her maiden voyage on June 14. Messrs. Harland & Wolff have equipped it with no fewer than 75 electrically-driven "Sirocco" fans, measuring from 20 to 50 in. in diameter. The accompanying illustration shows a few of these fans installed on the boat deck. Some of these fans, which are connected to heaters, distribute the fresh warmed air throughout the ship—others are used for extraction purposes, while twelve large "Siroccos" are employed for the ventilation of the stokeholds.



SIROCCO FANS ON OLYMPIC'S BOAT DECK.

The state board of harbor commissioners of California are preparing to expend the sum of $9,000,000 made available by a bond issue authorized by the legislature, on the improvement of the wharves in San Francisco harbor. The plans include the enlargement of the Ferry building by the addition of two wings; the construction of a permanent sea wall from Harrison street north; the construction of a bridge at the foot of Channell street and the rearrangement of the existing docks.

PROPOSALS FOR EXTENDING STONE jetty.—U. S. Engineer Office, Room 420, Federal Building, Public Square, Cleveland, Ohio, June 9, 1911. Sealed proposals for extending stone jetty at Sandusky Harbor, Ohio, will be received at this office until 10 o'clock A. M., July 15, 1911, and then publicly opened. Information on application. John Millis, Col., Engrs.

PROPOSALS FOR QUARTER BOATS and mattress ways.—U. S. Engineer Office, Vicksburg, Miss., July 15, 1911. Sealed proposals for constructing and delivering three quarter boats and one set of mattress ways will be received at this office until noon, Aug. 15, 1911, and then publicly opened. Information on application, J. A. Woodruff, Capt., Engrs.

PROPOSALS FOR TUG BOATS.—U. S. Engineer Office, Vicksburg, Miss., July 15, 1911. Sealed proposals for furnishing and delivering two steel hull, screw tug boats will be received at this office until 12 M., Aug. 15, 1911, and then publicly opened. The boats to have the following approximate dimensions: Length on water line, 75 feet; beam on water line, 16 feet; draught, fully coaled, 7 feet. Bids for any good tugs of approximately the above dimensions will be considered. The tugs will be delivered to the United States at Vicksburg, Miss. Further information and blank forms for proposals furnished on application. J. A. Woodruff, Capt., Engrs.

Generated on 2024-08-28 11:13 GMT / https://hdl.handle.net/2027/mdp.39015043584468
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN